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MINOR MALADIES AND THEIR TREATMENT

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MINOR MALADIES

AND

THEIR TREATMENT

BY
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FOURTH EDITION

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PREFACE TO FOURTH EDITION.

ALL medical works are egotistical; either furtively or frankly. If the matter is not coloured by the author's experience, if it be not presented in the form in which it emerges from the mill of his own brain, the result is a compilation which, though it may have some value in classifying facts, must nevertheless always fail in the more important direction of suggesting ideas. Orthodoxy is an easy comforting thing, but it is very confining. Heterodoxy, which in medicine is synonymous with progress, is a difficult and dangerous thing, but it is very interesting; often, it is even amusing. This book is entirely egotistical, and it is in many respects heterodox. It was first published in 1906; in each succeeding edition very considerable alterations have been introduced; the present one embodies changes greater in number and more considerable in importance than any of the others. The section on Constipation has been entirely rewritten; the chapter on Change of Air has disappeared, to be replaced by one on Minor Glandular Insufficiencies; and a small chapter on Old Age has been added.

615.5

When I was first qualified, I went into general practice. I soon found that though moderately well equipped in the diagnosis and treatment of diseases which I seldom encountered, I was disconcertingly ignorant in those matters about which I was most frequently consulted. Pneumonia I knew, and Rheumatic Fever, and Typhoid; I was so well acquainted with Phthisis that I confidently recognized it in every trivial cough; and, so well versed was I in heart-murmurs that I was prepared to discover them and treat them—with a combination of digitalis and words of serious warning—even when they had no real significance. With knowledge concerning Tabes, Tumours, and Trematodes I was full to overflowing; but I soon realized that I knew very little about a common Cold, less about ordinary Indigestion, and nothing at all about the rheumatic conditions. My knowledge of the subject of Personal Hygiene consisted in attributing to flannel all kinds of virtues, and to fresh air all manner of vices. In this dilemma I searched for a book which would lighten my darkness; but I found it not. I then determined that if time and circumstance should ever give me the opportunity of writing such a book, those of my juniors who found themselves in the same predicament should not want for such help as I might be able to afford them. The opportunity came about twelve years later, when I forsook the drive of a busy general practice for the comparative calm of consulting work.

Such of my experiences as I deemed of value in this connection (many of them were gained by sitting at the feet of elderly practitioners) first materialized in the form of some lectures and demonstrations which I gave at the Medical Graduates' College and Polyclinic in 1904. These were afterwards published, chiefly in the *Clinical Journal* and the *Medical Press and Circular*. When they were being put into book form they were supplemented by matter which had been incorporated in articles which had appeared in *The Lancet*, *The Practitioner*, and other periodicals. In each fresh edition this process of laying under contribution portions of my writings which had appeared elsewhere has been steadily persevered with. I am pleased here to record my appreciation of the facilities afforded me by the editors of these periodicals for this form of plagiarism, and to express my thanks to the proprietors of works of less evanescent character, the Oxford Medical Publications in particular, for allowing me to reproduce here portions of what was written primarily for them.

In rereading the proofs of the matter which has been left practically untouched since it first appeared in print, I have been forced to recognize that much of it is in reality once more in the crucible, not so much in detail as in principle. In therapeutics we often adopt measures merely because we know by experience that they succeed. An explanation

of the *modus operandi* comes later, and the correct explanation often much later still. Many of the subjects which I treated with dogmatism ten years ago have, in the interval, been subjected to fresher and fiercer lights which, in the future, may modify our present estimates, and may even change them beyond recognition. To write a medical book, however modest its aims, and to keep your hand conscientiously upon it, is to realize fully the first essential to the dignity and progress of medicine—namely, the ruthless cultivation of the open mind. To the contracting cerebral arteries of the seniors must be attributed the inadequate prestige of the profession in the body politic; it is with the juniors to redress the balance, by persisting in a divine discontent with present imperfections, and by pursuing with diligence the kind of heterodoxy which consists in a reasoned receptivity to new ideas. This is not to extol the excited welcome which I have too often seen extended to new therapeutic fashions. Those which are in my mind had no change in outlook to warrant them. It is experience alone which brings discrimination, but it is a safe rule which bids us receive with caution new methods which are not based upon fresh ideas. The substitution of a synthetic drug for a vegetable, in the treatment of a disease whose pathology is obscure, may succeed in the wholly laudable object of giving greater relief from symptoms, but we must not delude ourselves into believing that science

is thereby advanced. And it is, as a rule, precisely those who are most eager to follow new fashions who are most impervious to fresh ideas. It is an easy thing to prescribe a drug, but it is not an easy thing to readjust your outlook. The man who discovers a new drug—like Maclagan and his salicylates—is acclaimed as a deliverer; the man who preaches a new gospel, as Lister, Arbuthnot Lane, or George Gould, is despised by his contemporaries and stoned by his elders.

In so far as this book can pretend to be anything higher than an ephemeral practical aid to every-day practice, the larger claim would rest on the fact that in successive editions it has endeavoured to reflect the current of thought which is moving opinion among those who are really progressive. The ultimate object of medical science is prevention, not cure. The ultimate aim of any curative system is to influence a morbid process while it is still in a stage where skilful interference will do permanent good. Sir James Mackenzie is fond of insisting that our present methods of investigation are not sufficiently directed towards the discovery of disease in its earlier stages, that we are content impotently to contemplate the full-blown, whereas we ought to search for buds and tendencies. In this criticism I see much justice, and I believe that the serious study of what are called minor maladies will in this way lead to the prevention or forestalling of many serious diseases. Still more earnestly do I believe

that the study of the whole field of the Internal Secretions will enable us to detect and correct morbid tendencies with a degree of success which has been denied to the older methods. The microbe —the seed—has ruled the immediate past; the future is with the soil, the endocrine glands.

LEONARD WILLIAMS.

128, Harley Street, W. 1.
January 1, 1918.

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MINOR MALADIES AND THEIR TREATMENT.

CHAPTER I.

COLDS, COUGHS, AND SORE THROATS.

THE inflammatory conditions which are liable to affect the upper air-passages are usually attributed to inclement weather, and the elements, such as damp, cold, and chill, of which such weather is composed. This is a view which is no longer tenable. These inflammatory conditions we now know to be due to the same causes as those which produce inflammation in other mucous membranes—namely, irritation and microbic invasion. There is no doubt that these affections are more prevalent during inclement weather, and although we may admit that the inclemency, by lowering the resisting powers, may, in some cases and in some degree, contribute towards the microbic invasion, it is evident that other and more important factors must also be in operation.

These other factors are provided by the deficient

ventilation of houses, public buildings and conveyances, which immediately ensues when the weather becomes cold or otherwise disagreeable. Windows and doors, which in summer-time are always kept open, are closed in winter, with the result that pathogenic germs are in the latter season allowed opportunities for exercising their effects which are denied to them in the warmer weather. Moreover, in the summer, people spend much more time out of doors, and are consequently less exposed to the activities of the germs, which, as we know, are more readily killed by sunshine and fresh air than by any other means. Colds, coughs, and associated conditions are due, therefore, not to damp and chill, but to microbic invasion. The surest method of avoiding them is to cultivate efficient ventilation, and the most certain method of encouraging them is to tolerate impurity of atmosphere.

The association of 'chills' with these conditions is very old, and until comparatively recently these 'chills' were regarded as the cause of the malady. Most people now realize that this is not the case. The feelings of chilliness which so often occur at the outset of these complaints are not, as is so often erroneously believed, the cause of the symptoms—they are the primary manifestations of the malady, the sign which proclaims the success of the microbic invasion. The person who 'caught a chill' and subsequently developed a sore throat was, although he failed to realize the fact, already infected when he

experienced his chilly sensations. It is necessary to insist upon this view, because the laity cling with great pertinacity to the chill theory, with the result that fresh air, instead of being esteemed as a curative and prophylactic agent, is regarded as the deadliest enemy of the human race, and great vigilance is consequently exercised in excluding it by every possible means from houses, public rooms, and public conveyances. Until people become more enlightened, 'colds' and their congeners will continue to afflict them with quite unnecessary frequency.

The commonest of all disorders is the catarrh affecting the naso-pharynx, the larynx, or the larger bronchial tubes, which is known as a **COMMON COLD**. For reasons which have just been considered, the term 'cold,' as applied to this condition, is peculiarly unfortunate; for not only does it lend support to a mistaken view of the cause of the malady, but it tends to obscure what should always be realized in connection with it—namely, that it is infectious. It is a well-recognised fact that colds are very liable to pass from one member of a household to another, which means that they are epidemic in character, and, being epidemic, they must necessarily be caused by bacterial infection. This fact supplies us not only with an obvious means of avoiding them, but it points unmistakably to the proper way of treating them. The infection induces inflammatory action, and in ordinary people the inflammation begins in the nose. In those who, from adenoids or nasal

obstruction, habitually breathe through their mouths, it may begin lower down in the air-passages; but whenever it begins at a site which can be reached by nasal douching or gargling, it is, if taken in time, a very easy matter to abort a cold. This is done by the simple expedient of washing the microbes out of the part with an antiseptic solution, used both as a gargle and a nasal douche.

It is curious to observe how few people know how to use a nasal douche. There are several patterns on the market, all of which have merits; but the one which I prefer, because I am better acquainted with it than with any other, is called the Bermingham Nasal Douche.[1] It is employed as follows:

Having filled the douche with the necessary fluid, the index-finger is kept on the air inlet, and the nozzle placed well inside the nostril. With the head thrown well back and to one side, the operator then raises the finger, and if the point of the nozzle is not too tightly pressed against the mucous membrane, the fluid will flow into the nostril. What becomes of it then depends upon one thing, and one thing only. If the mouth is kept widely open, and the patient goes on breathing, the fluid will flow out of the other nostril; if the mouth is kept closed, the fluid will find its way into the œsophagus, the ear, or the larynx, giving rise to effects which are always disagreeable, sometimes alarming, and, in the case of the ear, occasionally very serious. The instruction to keep the mouth open

[1] That sold as Dr. Woakes' Irrigator is also very good.

should, therefore, always be dwelt upon. If the fluid does not flow out of the douche at all, the nozzle must be withdrawn slightly.

With regard to the fluid to be used, St. Clair Thomson insists upon the importance of the following three points: The solution should be warm—that is, not below 100° Fahr.; it should be alkaline by reaction, and should be isotonic with the blood plasma. If it is of lower specific gravity than the plasma, there will be painful exosmosis from the pituitary surface; if of higher specific gravity, there will be equally painful endosmosis. In either case the patient will complain of disagreeable and occasionally even of agonizing drawing sensations in the nose. Of preparations which fulfil these conditions, the most elegant and agreeable is that which is sold under the name of Glyco-Thymoline, whose active principle is a salicylate. It has, however, the demerit of being rather expensive. A good substitute is the following:

℞.	Sodii bicarb. } Sodii biborat. }	āā gr. iv.
	Sodii benzoat.	gr. ½
	Eucalyptol	♏ ½
	Menthol	gr. ¼
	Aquam	ad ℥i.

Solve et misce. Sig.: To be used frequently.

The following is also agreeable and efficacious:

Hazeline	♏xx.
Borax	gr. v.
Glycerine	♏v.
Water	to ℥i.

These solutions should also be used as gargles, so that the infective material may be flushed as rapidly as possible from all accessible parts of the upper air-passages.

By no means the least of the merits of this method of dealing with a nasal catarrh is, that should the catarrh be the first stage of an attack of whooping-cough, we are adopting the measures best calculated to cut short the attack, to provide against the spread of infection, and to prevent the occurrence of the sequelæ to which this disease owes its gravity. So effectual, indeed, is nasal douching in the treatment of this malady, even when delayed until the whoop is established, that to neglect to advise, and even to insist upon it, is in the judgment of many to undertake a very grave and a wholly unjustifiable responsibility. An excellent formula[1] for this purpose, which is substantially the same as that which used to be known as Dobell's Solution, is:

℞. Sodii bicarb. } ... ... ȝȝ gr. xxx.
Sodii biborat. }
Listerini ... ... ʒii.
Glycerini ... ... ʒvi.
Aquam ... ... ad Oi.

M. Sig.: To be used frequently.

When the catarrh commences lower down in the air-passages—*e.g.*, in the larynx—the local abortive treatment is not so easy of application, and is

[1] *Annals of Ophthalmology and Otology*, vol. v., No. 4.

consequently not always so successful. Nevertheless, it should always be tried and persevered with, because its effects cannot be other than beneficial. The means to this end which I have found most successful consist in the use of oils, such as eucalyptus, well vaporized or atomized in a suitable apparatus, and inhaled vigorously and frequently both through mouth and nose.

The atomizers on the market are numerous; that sold by Messrs. Oppenheimer under the name of the Universal Vaporizer is convenient, efficient, and comparatively inexpensive. The compound sold by the same firm under the name of Neboline No. 1, consisting of eucalyptus, menthol, and Scotch pine, is very agreeable; it is, however, expensive. A useful substitute is as follows:

Oil of eucalyptus	℥xx.-xl.
Menthol	gr. x.-℈i.
Liquid paraffin	to ℈ii.

Dissolve and mix.

Either ingredient may be used alone. Oil of eucalyptus is stimulating, though less so than thymol (of which 5 grains may be used in place of either of the above, and *dissolved by heat*). Menthol is sedative generally, but it is liable to excite lachrymation in some people.

Aqueous solutions in the form of sprays may also be used, but they are less efficacious than the oleaginous. The following are useful formulæ:

℞. Sodii bicarb. } ... ... āā gr. v.
Sodii biborat. }
Acid. carbol. lev. ... ... mℏ
Glycerini ... ... mxx.
Aquam ... ... ad ʒi.
Misce. Mitte ʒiv.

Sig.: Spray freely through the nostrils into the throat every four hours, or oftener, using Rogers' No. 1 spray.

℞. Pot. permang. .. .. gr. i.
Sodii chlorid. ... ... gr. v.
Aquam ... ... ad ʒi.
Solve et misce.

Whether the solution employed be aqueous or oily, the patient must be instructed to draw a sharp, deep breath each time the air-bulb of the atomizer is compressed. In this way the medicament will reach the larynx and the larger tubes.

In addition to these local measures it is desirable to increase the powers of resistance to microbic activity—first, by sending the patient to bed, and secondly, by freeing the primæ viæ. This is best done by a mild purgative and a hot bath, or, better still, a hot wet pack. If, in addition to the local symptoms, there should be evidence of constitutional disturbance, such as headache and a slight elevation in temperature, then a single nocturnal dose of opium is invaluable. The form which I prefer is liq. opii sedativus, and of this at least 20 drops should be given. In influenza, taken early enough, I regard opium as almost specific, but even in common colds its effect in soothing the inflamed mucous membrane

and in calming the irritated nervous system is most helpful. As a general tonic after a cold, nothing in my experience has proved so useful as quinine; and when giving quinine, it is always better to prescribe it in fluid form, and preferably as an effervescing mixture.

℞. Quin. sulph. ... ... gr. iiss.
Acid. citric. ... ... gr. x.
Aquam ... ... ad ℥ss.
M. Sig.: The A mixture.

℞. Potass. bicarb. ... ... gr. x.
Ammon. carb. ... ... gr. iiss.
Syr. simpl. ... ... ℥i.
Aquam ... ... ad ℥i.
M. Sig.: A tablespoonful of the A mixture to be added to two tablespoonfuls of this mixture and taken during effervescence.

Quinine in powder is not only capricious in its behaviour, but, as compared to a solution, it is much more liable to upset the stomach. When dissolved in hydrobromic acid, the drug is comparatively tasteless.

When once the inflammatory process is in full swing, the microbic activity is at an end. We can no longer expect any benefit by killing the organisms; it is only their irritative effect upon the air-passages that we can hope to influence. And if we wish our interference, in a process which is by nature self-terminating, to be really beneficial, we must not lose sight of the time-honoured division of expectorants into soothing and stimulating. If we stimulate the

mucosa in the congestive period, the only effect which we can logically expect to produce is that of increasing the patient's sufferings; and, similarly, if during the stage of free secretion we soothe the mucosa, the only reward for our activities will be a tardy and prolonged convalescence. When, therefore, the complaint is of rawness and a sensation of constriction either in the throat or behind the sternum, when the cough is hard, and accompanied at most by some slight mucus, when the skin is harsh and dry and the tongue coated, the only proper treatment consists in soothing, or, as they are very properly called, depressing expectorants. A very old combination and a very excellent one is as follows:

℞.	Vin. antimon. Vin. ipecac.	...	...	... ää ℥x.
	Spts. æther. nitrosi	...	...	... ℥xxx.
	Liq. ammon. acetat.	...	...	... ʒii.
	Syr. limonis	...	...	... ʒi.
	Mist. amygdal.	...	...	... ad ʒi.

M. Sig.: Every four hours, or, if the distress is great, half the quantity every two hours.

This is a time-honoured prescription, to whose efficacy in relieving congestion and promoting secretion several generations of practical therapists have borne grateful and willing testimony. There is one counter-indication to the use of such a mixture to which it would seem necessary to direct special attention, and that is the existence of any valvular disease of the heart in the patient for whom it is proposed to prescribe it. I have known at least one fatal

result to ensue from neglect of this very obvious precaution. Ipecacuanha and antimony, be it remembered, are both very powerful cardiac depressants, and if we are careless enough to give them to a patient with an organ which is already labouring under mechanical disadvantages, we must not be surprised if by so doing we provide the proverbial last straw in the heart's burden. When a complication of this nature confronts the practitioner, he must content himself with relieving the congestion by such means as poultices, hot packs, and purgatives, reserving his drug remedies for the relief of any symptoms which may be caused by the state of the heart. I must not be understood to imply, however, that such means as those just indicated should be exclusively reserved for cases in which valvular disease is present. On the contrary, a purgative and a hot wet pack are to be regarded as the very best subsidiary means of combating the condition, whether the intention be to abort an attack or to guide the inflammation to a rapid conclusion.

When the congestion is relieved and freedom of the secretion is established, then, and not until then, is the time for those stimulating measures which many people erroneously prescribe at the outset. As a good example of an expectorant mixture of this class, let me recall one which is as time-honoured as that which I have just quoted; it is as follows:

℞. Ammon. carb. ... ... gr. v.
Tr. camph. co. ... ... ℥xx.
Syr. scillæ ... ... ℥xxx.
Syr. tolu. ... ... ʒi.
Inf. senegæ ... ... ad ʒi.

M. Sig.: Every four hours.

It is well to remember that squill upsets the stomach in many cases, so that where this organ is weak this ingredient is better omitted.

When the muco-purulent exudation is mainly tracheal, such a mixture may fail to give the necessary relief. In such cases cubebs usually acts very promptly. It is the main ingredient in a much-advertised remedy. Twenty grains of the powder in a cachet three times a day is a very convenient form for its administration.

In connection with these catarrhal conditions, of which cough is such a prominent symptom, it will be convenient to glance briefly at some of the other **CAUSES OF COUGH.** We will leave out of consideration those coughs for which a cause is found as soon as the chest is examined—such, for example, as those which arise in the lungs and pleura from phthisis, pneumonia, pleurisy—and those which accompany tumours, aneurisms, and other gross cardio-vascular changes. Nor need such obvious causes as whooping-cough and measles detain us, for it is essentially the coughs which seem to own no relationship which give rise to difficulty. In the presence of such a cough in a child, it is well to remember two very potent but frequently

overlooked causes: the one is a collection of cerumen in the ear, and the other is nasal or postnasal obstruction. Cerumen, of course, is very liable to collect in the ears of adults, but in them it more often gives rise to giddiness than to cough, whereas in childhood giddiness is seldom complained of, and cough is common.. The removal, by the simple expedient of syringing the ears, of a troublesome cough which has caused anxiety and annoyance to a household for some time, is a proceeding which is highly calculated to increase the reputation of the man who does it and to injure the reputation of him who neglects it.

So far as concerns nasal and postnasal obstruction, there can be no doubt that, though the former is often overlooked, the degree and importance of the latter are very generally exaggerated. Where there is any obstruction in the nose itself to the free passage of air, that obstruction should be removed as soon as possible by operative measures. This is also true of gross obstruction caused by adenoids, but it is to be remembered that mild degrees of these vegetations are very rapidly and very effectually removed by pulmonary exercises, and that with the removal of the adenoids the cough vanishes. It is well for a young practitioner to remember that suggestions of the tonsillotome and its congeners do not awaken in private patients the same acquiescent indifference which may be relied upon in those of the hospital class, and that a reputation for a too-ready appeal to

operative measures is one which it is prudent to avoid. The very simple details of chest exercises or pulmonary gymnastics should, therefore, be mastered in order that they may be explained to parents and intelligent nurses.[1]

A cough is sometimes excited by a relaxed and elongated uvula, and such a cause should be suspected if the fits of coughing seem to be provoked by the recumbent posture. A relaxed uvula seldom arises independently; it is usually a part of a general relaxation of the neighbouring structures, secondary to nasal or postnasal obstruction or other cause, and may be treated symptomatically by an astringent gargle such as the following:

R.	Aluminis	gr. x.
	Glycerini	ʒi.
	Inf. rosæ acid.	ad ʒi.

M. Ft. garg. Sig.: To be used frequently.

Or, the parts may be painted at suitable intervals with glycerine of tannin, or with a mixture of equal parts of liq. ferri perchlor. and glycerine. This local treatment should be supplemented by measures directed to the removal of the cause, which is very often gouty or rheumatic. A brisk mercurial cathartic is always helpful.

When the uvula, in addition to being relaxed, is also œdematous, it should be seized at the point by a pair of forceps, drawn into the mouth and freely

[1] Harry Campbell: 'Respiratory Exercises in the Treatment of Disease' (H. K. Lewis).

scarified with a sharp knife. Such a proceeding is very simple, is almost painless, and the relief which it gives is instant and complete. The occurrence of such an œdema, however, even when it has been successfully dealt with by the above means, should never be lightly regarded; for although the majority of cases terminate favourably in a short time, especially when the underlying cause is discovered and treated, in a certain proportion of them the œdema progresses downwards until the glottis is involved. Such a complication, according to Sir Felix Semon, may be suspected if the ordinary redness of a relaxed throat presents a bluish tinge, or if the element of dysphagia is out of proportion to the amount of inflammation present. The patient in such circumstances should be carefully watched, and the friends warned of the possible danger. A mixture containing ℥xx. of liq. ferri perchlor. and ℥x. of liq. hydrarg. perchlor. to 3 ounces of water should be given, preceded by a brisk cathartic, and preparations be made either for intubation of the larynx or for the performance of tracheotomy on the occurrence of urgent symptoms.

A cough which presents very distinctive features is that which is associated with chronic irritation either in the larynx or trachea. The irritation often amounts to nothing more serious than a relaxed and slightly catarrhal mucosa, the aftermath of a bronchitis or an attack of influenza. The latter is especially liable to give rise to it, but it may occur

independently of any obvious cause, and is then usually the result of anxiety, worry, and overwork. It is more common in relaxing climates, and is aggravated by dull, damp weather. Such a cough may be more or less present throughout the day, but it is, especially in the morning and at night, liable to energetic exacerbations. The amount of matter voided is very small in proportion to the violent efforts which its expulsion seems to entail, and consists mainly of colourless glairy mucus. During the paroxysms the patient's face becomes congested, and so rapid are the expulsive efforts that he is unable to inspire. A climax is often reached by a spasm of the diaphragm, which causes retching or even vomiting.

Having regard to these facts, it is not surprising that such a cough is frequently mistaken for whooping-cough, its resemblance to which is further borne out by its obstinacy to ordinary cough-mixtures. If it is remembered that a cough of this kind is essentially a manifestation of debility, there should be no difficulty in affording speedy relief. Perhaps the best remedy of all is a complete holiday in some really bracing climate, such as that of Margate and the other stations on the east coast. This, however, may be out of the question, so that it is well to consider other means.

As a measure for allaying the cough, an acid in combination with glycerine is very useful, and one of the best acids for the purpose is the acid phosphor. dil., of which 25 to 30 minims should be given to the drachm of glycerine in an ounce

of water three times a day. To such a mixture the addition of about 2 grains of quinine and 4 minims of tr. nux vom. will be found helpful in relieving the relaxed state of the mucosa, which is the real cause of the trouble. Gargles are of very little service in this condition—they are, indeed, quite useless—but lozenges are most valuable. That which I have found most effective is the Krameria lozenge. It is not very unpleasant, and it certainly helps to restore tone to the affected parts. Patients should be warned in connection with this lozenge that it is not meant to be sucked. It should be allowed to remain between the teeth and the cheek, and to dissolve slowly of its own accord, otherwise its activities will be expended upon the œsophagus, and the larynx remain altogether uninfluenced. There is another warning in connection with lozenges of all sorts of which it is well to remind patients, namely, that they should be taken out of the mouth if there is any immediate prospect of sleep; for during sleep, not alone a solution of its ingredients, but the whole lozenge, might easily find its way into the larynx, with disastrous consequences.

If such measures fail to relieve the cough, there need be no hesitation in adding as a temporary expedient, say 10 minims of nepenthe to each dose of the above mixture. Heroin ($\frac{1}{12}$ to $\frac{1}{8}$ grain) is most valuable.

The coughs which arise in association with gastric, hepatic, and intestinal derangements are to some extent characteristic. They are generally loud, short,

and frequent, and do not result even in the discharge of mucus; that is to say, they express a reflex and not a direct irritation. Their treatment is necessarily bound up with the discovery and efficient management of the original cause. More often than not this will be found to be chronic constipation; it may turn out to be intestinal worms, inactivity of the liver, gastric dilatation, or some lesion even more serious; the important point to remember being that, apart from aneurism, a cough which is persistent, obtrusive, and futile, generally has its cause not above, but below the diaphragm.

Another kind of cough which is associated with gastric derangements is that which is typically seen in alcoholics. In its main features this cough may resemble closely that just described as laryngeal and due to debility; indeed, alcoholics very frequently have a huskiness due to relaxed vocal cords, but the existence of the chronic poisoning is generally easy to detect, and its detection not only prevents any misapprehension as to cause, but points unmistakably the right line of treatment.

Having mentioned *Influenza*, it seems fitting that I should say a word or two in connection with it. It may begin as a minor malady, but it is very apt to become the reverse. If the illness be taken in time, and the patient sent to bed until the temperature and other obtrusive symptoms have subsided, the disease is easily kept within the category of minor conditions; but if it is allowed to obtain a

'hold' of the patient, so as to give dangerous sequelæ an opportunity of developing, then influenza is liable to be one of the deadliest of diseases. I know of no condition in the presence of which I feel less hopeful than a pneumonia which is secondary to influenza—a complication which supervenes most frequently, one might almost say exclusively, in cases where the primary condition has been regarded as a passing matter which should not interfere with the ordinary affairs of life. The necessity for early recognition and prompt treatment of these cases, even when slight, is further emphasized by the fact that when they are allowed to be 'ambulatory' the subsequent depression is always much more pronounced and of infinitely longer duration than when they are taken in time and suitably treated.

It is not that there is, nowadays, any tendency either to overlook influenza or to belittle it when present. The difficulty is, indeed, in exactly the opposite direction, for it is quite certain that many conditions are constantly labelled 'Influenza' which are no more due to the Pfeiffer bacillus than they are due to the Bacillus typhosus. Since about 1890, 'influenza' has become a sort of diagnostic rubbish-heap on to which is cast every febrile state which cannot with certainty be referred elsewhere. There is really no reason for this, because the Pfeiffer bacillus is as characteristic as the Klebs-Loeffler or any other whose presence is regarded as distinctive of a certain disease, so that a positive diagnosis of so highly infectious a condition

should not be made without the confirmatory evidence which the presence of the bacillus affords. It is, of course, often exceedingly difficult to be certain as to the exact nature of a febrile condition at first, or even subsequent, visits, but there is no excuse for seeking to overcome the difficulty by idly attaching a label, which, though it may be satisfying, is wrong. It is much better to be frank in such matters; the practitioner who is straightforward always commands more confidence and greater respect than the one who poses as omniscient.

The presence of real influenza may always be suspected from the sudden onset of symptoms with a high temperature. The symptoms may vary in degree and in kind (they are divided into nervous, respiratory, and gastro-intestinal), and their severity is not often great, but when they appear suddenly—so suddenly as to suggest a blow from an unseen hand—then the probability is that they are influenzal in origin. Occasionally, of course, the symptoms themselves are overwhelming in their severity—so overwhelming, in fact, as to convert a strong, healthy man into a prostrate mass of aches and pains in less than five minutes. The temperature at the onset is often high, reaching 105° F. or over, but it may be quite low, and even, according to some, subnormal from the first. Typical cases in an epidemic are by no means difficult of diagnosis, but atypical cases, especially where they are sporadic, should always be referred to the bacteriologist before a positive opinion is given.

If the disease is seen at its onset, the patient ought to be sent to bed at once, and kept there until the temperature has fallen to normal and the attendant discomforts have ceased. There is nothing which hastens this end so much as an initial dose of opium. I was first made acquainted with its merits about the time of the 1890 epidemic by a note in one of the journals by Sir Samuel Wilks, who told how, according to his diary, Prince Napoleon had been cured by such a dose, which had been prescribed by Corvisart. Since that time I have appealed to it on many occasions, and, if in a sufficiently early stage, never in vain. It is, however, necessary to give a full dose, say 20 to 30 minims, of liq. opii sed., if the beneficial effect is to result. This effect shows itself, as a rule, in a remarkably short space of time, and consists in the disappearance of the pains and the production of deep and refreshing sleep. So much impressed have I been with this line of treatment that I have learned to regard opium almost in the light of a specific against the Pfeiffer bacillus. That it should relieve the pains and soothe the irritated nervous system is not on general principles surprising, but that it should effect its purpose so rapidly, so completely, and so permanently, points to some action other than the ordinary effect of the drug, and is highly suggestive of some specific influence (see p. 52).

When the acute stage is past, quinine seems to be the most useful drug. It appears to render the subsequent depression less profound and of shorter

duration. In connection with this depression, it is well to remember that it is often intensified by excessive and injudicious feeding. The 'keeping-up' régime, which is so commonly prescribed during this stage, is regarded by the anxious friends as the height of therapeutic wisdom, but in reality it is liable to be quite the reverse. The system is very apt to become overloaded with effete matters, and the poisons have in consequence fewer opportunities for escape. The best thing to do with such a patient is to see that the food is simple and nutritious, containing a little meat and some alcohol in the form of a well-matured wine, and to arrange for a complete holiday at the seaside as soon as possible. The locality chosen must depend, among other things, upon the time of year and the type of the attack, but bracing climates are as a rule strongly indicated.

The next subject to be considered is that of **SORE THROAT.** There are, of course, several kinds of sore throat, and I wish it could be said that the degree to which specialism in this department has attained had been productive of any corresponding degree of precise knowledge as to their varieties and causation. To the plain man, where it does not mean scarlet fever or some similar condition, in which accompanying symptoms are present to clear the issue, sore throat spells tonsillitis; and with regard to a tonsillitis, the first point to decide is whether or not it is diphtherial. In these days of bacteriological investigation and antitoxin treatment,

the question may not seem to present the same importance as it did in the days when we were still without such assistance. But bacteriological investigation takes time, and reliable antitoxin is not always easy to procure, so that it is well to be prepared with a plan of campaign which leaves such luxuries out of account.

Speaking as one who has had more than his fair share of experience in diphtheria, I may say that I know of no condition which, in its slighter forms, at any rate, is more difficult of diagnosis. It is, even now, no uncommon thing for a sore throat which has been dismissed as a passing matter tardily to vindicate its true character by a legacy of alarming and even fatal paralysis. Apart altogether, therefore, from the question of preventing the spread of infection—a question whose importance and urgency cannot be too strongly insisted upon—it is essential that we should not, if we can help it, fail to recognise a case of diphtheria when we see it. Now, there are two aids to diagnosis which, partly, perhaps, on account of the luxury of the bacteriological short-cut, seem to be falling into increasing disuse, of which, for this reason, and as being easy of performance and capable of yielding information of the utmost value, it is well that we should remind ourselves. The one is the state of the knee-jerks, the other the state of the urine. It is generally known, perhaps, that in diphtheria the knee-jerks are liable to disappear, and that albumin is often present in

the urine. But it does not seem to be sufficiently realized that these phenomena, when they do occur, occur early, sometimes very early, in the disease, and that it is therefore our bounden duty to look for them in every case of sore throat, however slight, which presents itself to our notice.

Now, let us suppose that we have detected such a case, and that a considerable amount of precious time must necessarily elapse before any reliable antitoxin can be obtained. What are we to do? Taking the ordinary precautions as to isolation, etc., for granted, the first thing to do is to give the patient a mixture containing biniodide of mercury. Before the days of antitoxin I had learned to have so much confidence in this drug that I came to regard the occurrence of a case of diphtheria with something very nearly approaching to equanimity. The biniodide is insoluble in water, though freely soluble in the presence of an excess of iodide of potassium. The following is a convenient way of prescribing it:

R.	Hydrarg. perchlor.	gr. i.
	Potass. iodid.	gr. xxx.
	Glycerini	ʒii.
	Aquam	ad ʒviii.

In such a mixture a double decomposition takes place between the two salts, and the amount of resulting biniodide is rather less than the original amount of perchloride, so that each ounce contains rather less than $\frac{1}{8}$ grain. The ordinary tablespoonful is,

therefore, a perfectly safe dose for an adult; and if its effects are carefully watched, it may be frequently repeated. The glycerine is added with the view of causing the mixture to adhere to some extent to the fauces, and of thus securing a local as well as a constitutional effect. The biniodide of mercury as a bactericide is four times as powerful as the perchloride, and it has no tendency, as the perchloride has, to throw down an inert albuminate when brought into contact with the tissues. Whether for these reasons, or because it is especially inimical to the Klebs-Loeffler bacillus, in the same way that nitrate of silver is especially inimical to the gonococcus, there can be no doubt that, antitoxin apart, HgI_2 is a far more effective weapon in combating diphtheria than any drug, inhalation, or pigment which has ever been introduced.

In severe cases of diphtheria, whether or not antitoxin be available, an early appeal should be made to strychnine, preferably by subcutaneous injection. This drug is believed to present a direct physiological antidote to the action of the toxins, by stimulating the very centres which the toxins tend to depress. Now, in a bad case, the toxins are being manufactured in large quantities, so that to be efficacious the drug must be vigorously pushed. The ordinary dose of $\frac{1}{60}$ to $\frac{1}{30}$ grain is quite useless even in the case of children. If the effects are watched, it will be found perfectly safe to give $\frac{1}{10}$ or $\frac{1}{12}$ grain four times a day for three or four days, and those who have not

tried it will be surprised to find how well it is tolerated. Strychnine is also infinitely the best drug for the treatment of diphtheritic paralysis. It is then best given by the mouth in combination with liq. ferri perchlor. (*vide* formula on p. 29).

When we come to consider the forms of tonsillitis other than diphtheritic, I have to confess to an absence of settled convictions. That tonsillitis[1] may be, and often is, a manifestation of true articular rheumatism, giving rise to endocarditis and causing valvular disease of the heart; that it may, on the other hand, own no such relationship, and, even after repeated attacks, be followed by no such consequences; that under the name of 'septic throat' it is very properly recognised as due to bad drainage; that not infrequently, especially in autumn, it seems to become epidemic; and that, finally, it often arises under circumstances so ill defined that it is forced to herd with a motley company of congeners and aliens in that enormous pigeon-hole labelled 'Chills'—these and perhaps some other facts are familiar to us, but connection and co-relation between them there is none. Fortunately, however, the aspect of the matter which we are considering—namely, the mere utilitarian one of treatment—is but little affected by our ignorance, but before we discuss that question it is desirable to emphasize one point in the diagnosis.

[1] 'Tonsillitis' and 'quinsy' are terms which are frequently confused. Tonsillitis means an inflammation of the tonsil itself, whereas quinsy signifies a peritonsillar inflammation which frequently leads to abscess formation.

There is, as I have said, nothing in the state of the throat itself to help us to determine whether a tonsillitis is, or is not, of rheumatic origin, and as the settlement of this question is of paramount importance to the patient, it cannot be too strongly insisted that a careful examination of the state of the heart should be as much a matter of routine in a case of tonsillitis as it is in chorea or articular rheumatism. And in examining the heart, the feature to which particular attention should be directed is its size. The detection of any signs of dilatation, especially of the right heart, is of the utmost importance, for it enables us to deal with the condition while it is still amenable to treatment. If we wait until a murmur has declared itself, the time for effective interference may be already gone. With some people the examination of the heart is comprised in the use of the stethoscope; but auscultation is in reality far less important than percussion, and he who wishes to detect the earliest signs of impending mischief will do well to bear in mind that most excellent clinical rule, 'Eyes first, fingers next, ears last.'

In the matter of the treatment of a tonsillitis, the first point of importance to be observed is the degree of the accompanying fever. If this is slight, the fact should give rise to a strong suspicion of the case being diphtheritic, and steps should immediately be taken to settle the diagnosis by bacteriological examination. In most illnesses a moderate elevation of temperature means a moderate degree of anxiety,

but sore throat provides a notable exception to this very obvious rule, which ought always to be borne in mind, not only because of diphtheria, but also because some, at any rate, of the worst septic throats are often attended by a quite insignificant amount of fever.

If the temperature is high, which in most cases of tonsillitis, other than diphtheritic, it usually is, the tincture of aconite has an excellent effect. When the thermometer registers 105° F. in a patient in whom we need not fear a certain amount of cardiac depression, tincture of aconite, in doses of 5 minims every four hours, or, better still (where its effects can be watched), in drop doses hourly for a few hours, will bring down the temperature rapidly, and will confer a degree of comfort on the patient which is really remarkable. And the higher the temperature, the greater is the confidence with which the drug may be prescribed. If a tonsillitis is taken early enough, it is quite possible to abort it by means of aconite alone. I have learned, however, not to depend on aconite alone. I find that it acts better, or, at any rate, that its action is not impaired by the presence in the mixture of other drugs directed against the local and constitutional aspects of the case. For instance, where the case is unquestionably rheumatic in origin, apart from the salicylates, upon whose importance I need not dwell, I have found guaiacum to be a most trustworthy remedy, and, in spite of the inelegance of the resulting mixture, I can fully recommend this formula :

℞. Potass. chlorat. ... ... gr. x.
Tr. aconiti ... ... ♏v.
Tr. guaiac. ammon. ... ... ʒi.
Mucilag. acaciæ ... ... ♏xx.
Aquam ... ... ad ʒi.

M. Sig.: Every four hours.

As soon as the temperature has fallen the aconite should be discontinued; but the other ingredients, the chlorate of potassium and the guaiacum, may be persevered with for some time.

When a sore throat is neither diphtheritic nor rheumatic, it is always safe to treat it as due to some septic influence, and the treatment of such conditions is one of the most satisfactory things in all therapeutics. The following mixture, with such slight variations as special circumstances may suggest, constitutes what the advertisements of quack medicines describe as a sovereign remedy, one of the very few with which I am acquainted:

℞. Tr. aconiti ... ... ♏ii.-v.
Potass. chlorat. ... ... gr. v.
Liq. ferri perchlor. ... ... ♏xx.
Liq. hydrarg. perchlor. ... ... ♏x.
Liq. strychninæ ... ... ♏v.
Glycerini ... ... ʒii.
Aq. chlorof. ... ... ad ʒss.

M. Sig.: Every four hours, or, better still, half the quantity every two hours, at any rate until the temperature falls.

As in the case of the previous mixture, the aconite should be stopped as soon as the temperature subsides, and the other ingredients continued until the local conditions in the throat are satisfactory.

This prescription owes its efficacy to its antiseptic powers. Few people seem to realize that liq. ferri perchlor. is, when taken internally, a bactericide of the utmost value. It was no doubt originally suggested in sore throat because of its astringency, but this attribute would not even partially explain its almost magical effects in a tonsillitis of septic origin. The liq. hydrarg. perchlor. is added with the view of accounting for any cocci which may escape the attention of the iron salt, and the glycerine to enable the mixture to remain longer in contact with the fauces than it would otherwise do. Strychnine, in addition to being a general tonic, appears to have an antiseptic effect in most cases of septic sore throat, and it is, therefore, always well to include it. Chlorate of potassium is given more as a matter of routine than anything else. It has a reputation in inflammatory states of the pharynx, and if it does no good, it certainly does no harm. Treated with an initial purgative of a few grains of calomel, and by perseverance with this mixture, a tonsillitis which is neither diphtheritic nor rheumatic will yield completely in an astonishingly short space of time.

In the matter of the taking of temperatures, not only in cases of sore throat, but in all cases, there is a word of warning to which I should like to direct attention. It has been proved that the temperature in the mouth is very materially influenced by many comparatively insignificant conditions which are purely local to the mouth itself. Thus hot fluids

such as tea will raise the temperature two or even three degrees, and maintain this elevation for two hours or more. Food of any sort will also raise the temperature, though to a slighter degree, and cold fluids will depress it. The moral of this is that we should never be satisfied with a temperature which has been taken in the mouth. This is, of course, infinitely the most convenient place in which to take it, especially in a person fully dressed, but we do well to remember that a record so obtained is very unreliable under all circumstances, and that it is conspicuously so when any portion of the buccal or pharyngeal mucous membrane is inflamed.

There is a condition which, as it is often described as a **FEVERISH COLD**, it is as well to notice here. It is, indeed, known to fame by various names. The scientifically-minded call it 'febricula,' those who seek to be impressive describe it as a 'chill on the liver,' while everyone is very liable to mistake it for influenza. It consists of a general feeling of malaise, with pains in the back and limbs, accompanied by a temperature which may ascend in forty-eight hours to 102° F. or over. It may be distinguished from influenza by its comparatively gradual onset, by the fact that the pains, though severe, are aggravated by movement and are always worse at night, by the comparative absence of other symptoms, and by its very rapid defervescence under suitable treatment. The condition has nothing to do with cold; it is as a rule connected with the gouty diathesis even in young

people, and is essentially a myalgia or 'muscular rheumatism' distributed over a wide area.[1] If it is seen early enough—that is, before the temperature has risen above 100° F.—a hot wet pack (*vide* p. 204) will probably cut it short. The primæ viæ should be cleared, and aspirin given in doses of 10 to 15 grains every three hours until the symptoms subside. In people who are otherwise healthy I have often known a single dose of 20 grains of aspirin to remove all symptoms in a few hours. It is important to recognise this condition, because the mistake of confusing it, as is now so often done, with influenza creates very unnecessary alarm in the patient's household and amongst his friends. Moreover, the condition being allied to goutiness, a wrong diagnosis of influenza will almost certainly lead to a disastrous line of after-treatment. The prostration which follows even mild attacks of real influenza suggests a tonic and stimulating régime, whereas the after-management of febricula should be directed to prevent a recurrence by combating the gouty tendency which predisposes to the condition. The person who has had influenza 'fourteen times in the last three months' has probably never had influenza at all. The attacks have been due to febricula, and their constant recurrence has been the result of a wrong diagnosis, and its logical outcome, mistaken treatment. In a great many of these so-called influenzal attacks the real cause is toxæmia of gastro-intestinal origin arising from abuse of meat foods, alcohol and tobacco,

[1] See Chapter IV.

leading to high arterial tension, a question which is discussed in the chapter on Goutiness.

Sore throats of septic origin are occasionally overlooked. Where the invasion is severe and the constitutional symptoms are consequently pronounced, the local discomfort is apt to be lost sight of; the patient does not mention the throat, and its condition is therefore not investigated. The high temperature being thus the only objective sign, the case is liable to be regarded as one of typhoid, a watching policy is pursued, and no improvement results. It is therefore a good rule to examine the throat carefully in every case where a high temperature is not due to some obvious cause.

In cases where there is reason to suspect typhoid, there is one simple diagnostic point which, when present, is very helpful. It is that in this disease, though the temperature is usually very high, the pulse may be low, the one registering, say, 104° F. and the other from 70 to 80. In cases of undoubted typhoid a rapid pulse is of evil prognostic omen.

A CONSTANT SUCCESSION OF COLDS occurring in the same person should never be lightly regarded. The recent impetus which has been given to the study of tuberculosis has resulted in the bringing to light of various signs and symptoms which indicate a condition of what is called pretuberculosis—a condition, that is, in which, although there may be nothing which permits of a positive diagnosis, there are never-

theless indications of sufficient importance to warrant grave suspicion. The time has now gone by when, before commencing treatment, we used to wait in prayerful patience until there was an involvement of the pulmonary area so definite as to be accessible to ordinary percussion and auscultation. We now realize that to wait for the classical signs of phthisis is to allow the period to slip by in which treatment is most likely to be effective. Phthisis is, no doubt, under favourable circumstances, a very curable disease; but the condition precedent to its ready curability is its detection in its earliest—that is, its pretuberculous—stage.

The stigmata which may be said to reveal the existence of this stage are, like a constant succession of colds, for the most part, individually so unimportant that they are properly regarded as minor conditions; it is only the association of several or many of them which confers upon them their gravity. They would seem, therefore, to deserve more than a passing notice.

In common with all other toxic agents, the poison of tubercle has certain physiological effects. Of these, one of the most important and far-reaching is its relaxing effect upon the peripheral vessels. When it is borne in mind that the tuberculous toxin is initially above all things a powerful vaso-dilator, it becomes comparatively easy to understand and recall many of the phenomena of pretuberculosis which otherwise seem disjointed and obscure.

Directly consequent upon this vaso-dilation is the important symptom of *tachycardia*. What is true of most of the other symptoms to which, in this connection, reference will be made is very conspicuously true of tachycardia—namely, that it is by no means always present. In cases of demonstrable tuberculous lesions it is, of course, a prominent and constant symptom, but in the very earliest stages there are frequently no signs of heart-hurry. Nevertheless, an unduly rapid pulse in an otherwise seemingly healthy person should always suggest tuberculous infection as its cause. A grave error is often committed in attributing such a tachycardia in young men to excessive tobacco-smoking.

Another symptom which is directly due to the vaso-dilation caused by the poison is *albuminuria*. A good deal of very unnecessary, and, I may add, scarcely justifiable, alarm is occasioned to patients and their friends by the unduly narrow view which is commonly taken of the significance of this symptom; for albuminuria, it seems necessary to insist, is a symptom, and nothing more than a symptom; and it is as absurd to regard it as synonymous with kidney disease as it would be ridiculous to consider epistaxis as synonymous with typhoid fever. Albumin will appear in the urine if the kidneys are in any degree passively congested. A widespread vaso-dilation will readily cause this passive congestion, especially if the patient be going about in the ordinary way—if, that is, he is for the most part in the erect posture. This

is a phenomenon with which we are all familiar in the cyclical or postural albuminuria of adolescents, a condition which has been attributed to many causes, and has in numberless instances been made the occasion of solemn head-shakings, but which is in reality due simply to a want of tone in the muscular coats of the peripheral vessels, giving rise to passive congestion in the renal area. Owing to the vaso-dilative effect of the poison, this passive congestion is very liable to occur in early tuberculosis. It is not, of course, suggested that all those who present the phenomenon of cyclical or postural albuminuria are necessarily pretuberculous, but I am distinctly of opinion that the discovery of albumin in the urine of an adolescent, which has not been voided immediately after exercise, is a sign which should lead to a very minute examination for other evidences of tuberculous invasion. Collier of Oxford and others have conclusively shown that albumin in the urine of young men soon after exercise is not only without morbid significance, but that it may even be regarded as a normal sequence of severe muscular exertion.

Another symptom of early tuberculosis in the causation of which vaso-dilation may reasonably be considered to bear some part is *dyspepsia*. Dyspepsia, especially of the asthenic type, is due to a faulty adjustment between the blood-pressures in the local areas. A widespread vaso-dilation disturbs the normal balance, and tends to deprive the gastric

area of that increment of blood which for the purposes of the digestive process is essential to it. The dyspeptic symptoms which so commonly forerun the ebullition of definite tuberculosis, more especially of the lung, are thus easy to understand. The difficulty consists in the fact that we are so liable to forget their true significance. Such a dyspepsia may be accompanied either by diarrhœa or constipation, but in the earliest stages constipation is much the more common of the two.

Two other signs, which may be included under the head of results of vaso-dilation—namely, *mental hebetude* and *muscular debility*—are, of course, by no means peculiar to tuberculosis; but, like others, their presence—especially their continued presence—in young people, without obvious cause, goes to swell the number of points upon which a superstructure of reasonable suspicion may be erected. The majority of lethargic children who are punished for indolence at school, when they are not the subjects of eyestrain or nasal obstruction, owe their lack of energy and want of comprehension to the relaxing effects of the tuberculous toxin; and a large number of adults who are idly labelled 'neurasthenic' undoubtedly owe their nervous exhaustion to the early inroads of the bacillus.

Among the many causes which give rise to *suppression of the menses* the action of the poison of tubercle should not be forgotten. This is another symptom

which is due directly to its vaso-dilative power. Menstruation is effected by the dilation of the pelvic vessels coincidently with a contraction of the other systemic arteries. If the contraction of these arteries is prevented, as by nitrite of amyl or trinitrine, the menstrual flow does not appear. The poison of tubercle acts in the same way, though less powerfully, and hence it is that amenorrhœa is so common a precursor of obvious tuberculous mischief.

The second physiological effect of the tuberculous toxin under which, in our efforts to generalize, we may group some of the phenomena of the very early stages, is irritation of the nervous system. The most important member of this group is certainly *pyrexia*. The fever of tuberculosis is one of the most interesting features of this complex disease. It is, as a rule, slight, sometimes so slight as to escape the notice of all but the most meticulous observer, and, although it is almost invariably present, it is usually only at night that it is to be detected. By no means infrequently it follows in the wake of a pyrexia due to some obvious and well-recognized cause, and seeks, as it were, to conceal its real significance by masquerading as a continuance of this initial complaint. But perhaps the most characteristic feature about the fever of tubercle is its persistence. We have all been taught to suspect the operations of the bacillus typhosus in a case where malaise and a temperature represent the only departures from the normal. It

does not reduce the value of such advice to recall the saying of the late Dr. Moxon, of Guy's Hospital, to the effect that if a candidate at an examination failed to include tubercle among the causes of continued fever, he always referred him to his studies. Among the many negations and ambiguities of this evasive and protean disease we have, then, this positive and unequivocal sign to aid us: that fever, whether it be of the intermittent, remittent, or hectic type, especially if the rise be slight and present only in the afternoon between the hours of 2 p.m. and 6 p.m., which persists beyond the allotted span of recognisable fevers, is in all human probability tuberculous in origin.

It is, however, necessary to remember that a temperature of 99° F. to 99·6° F. is not uncommon from 2 to 8 p.m. for three or four days before a perfectly normal menstrual period. Moreover, Kingston Fowler says that the only form of pyrexia which can be regarded as pathognomonic of tubercle is that in which the morning temperature is higher than the evening reading. A subnormal temperature when persistent and most pronounced in the evening is generally due to thyroid insufficiency.

To an undue irritability of the nervous system we may, I presume, attribute the *psychical characteristics* of most pretuberculous persons. The sufferers from gross lesions are notoriously, unduly, and even pathetically optimistic in their mental out-

look, but such is seldom the attitude of the pretuberculous. The atmosphere surrounding the latter can only be described by the French word *difficile*. It is not that they are necessarily aggressive, though they sometimes are, but they present a conspicuous absence of what Matthew Arnold used to describe as 'sweet reasonableness.' They are passive resisters to any suggestions for their welfare, and they are apt to try the tact and patience of the physician more severely and more obstinately even than people who are definitely insane. A change of manner and disposition in this rather indefinite direction, more especially when associated with other signs, constitutes confirmatory evidence of very anxious omen.

Very considerable importance is attached in France to a sign of pretuberculosis, which is presumably the direct outcome of irritation of the nervous system, of which in this country we hear very little—namely, an *exalted sexual appetite*. The toxin of tubercle would seem, especially in young men, to exercise a very decided aphrodisiac influence, and our French friends contend that in the many cases in which the disease appears to supervene as a fitting nemesis upon a licentious adolescence, the real truth lies in the fact that when the unfortunate patient embarked upon his immoral career he was already the subject of tuberculous invasion—that it was, in fact, the action of the toxin which impelled him to the unbridled gratification of his passions. This view of the matter

is well worthy of serious consideration among people like ourselves, in whom an unduly literal interpretation of the Old Testament teaching has begotten a belief in the direct intervention of Providence for the immediate physical punishment of moral transgression.

Trousseau was the originator of the saying, which has been attributed to many physicians since his time, that an *anæmia* which does not yield to iron is probably due to tubercle. It would be difficult to overestimate the value of the practical lesson which this saying is intended to convey. The form of anæmia to which it refers is, of course, a general anæmia: in young girls we should call it chlorosis. An examination of the blood reveals nothing which serves to distinguish it from chlorosis, but it is of paramount importance that it should be so distinguished, and that as soon as possible. There is also a local anæmia, which, as being more common, is of even greater importance than this general anæmia, and of which, in our search for the stigmata of pretuberculosis, we do well to remind ourselves. This is the anæmia of the soft palate with which throat specialists are familiar in all cases of laryngeal tuberculosis. Now, this is a symptom which frequently occurs quite independently of a general anæmia, and independently also of definite laryngeal tuberculosis; it is, in fact, a valuable sign of pretuberculosis, and one which from its ease of recognition should always

be looked for. It seems hardly necessary to point out that in the other two classical chronic diseases—namely, gout and syphilis—the soft palate, instead of being ischæmic and insensitive, is almost invariably injected and irritable. The pretuberculous throat supports a laryngeal mirror with equanimity; the gouty or syphilitic throat will often refuse to tolerate it until cocaine has been liberally applied.

In connection with the throat there is another matter to which it seems pertinent here to refer, and that is the significance of *functional aphonia*. This is commonly and very authoritatively described as one of the stigmata of hysteria, but it is now being invested with a fresh importance, inasmuch as it is confidently regarded as one of the very earliest manifestations of pretuberculosis. I have no experience which enables me to confirm this view, but the quarter from which it emanates entitles it to every respect and consideration.[1]

Among the symptoms of pretuberculosis the exact meaning of which still await explanation the occurrence of dyspnœa is probably the most important. The *dyspnœa* of the fully-developed or active pulmonary lesion requires, of course, no explanation;

[1] Soon after the above was first published (*Polyclinic*, October, 1907), Dr. Fleming Browne wrote to tell me of a patient, now definitely phthisical, whom he had first seen six months previously with complete aphonia. The throat specialist who was consulted assured him that it was purely functional. The voice soon returned, and this was followed at a short interval by the development of demonstrable phthisis.

but it should be remembered that breathlessness due to a tuberculous cause is by no means confined to the later stages of the disease, nor is it even a special attribute of pulmonary invasion. There is a dyspnœa which is apt to appear in the very earliest stages of tubercle, and it is just as likely to herald abdominal or intracranial mischief as the more classical phthisis. There is nothing characteristic about it except that the most careful examination of the heart and lungs fails to afford any explanation of its meaning. It is to be distinguished from the dyspnœa of slight effort, which is so suggestive of functional high arterial tension,[1] only by the observation of concomitant signs. In tuberculosis there will probably be present some of the other stigmata with which this section deals, and the patient will generally be young. In the arterial condition there will be the accentuated second sound at the aortic base, and the patient will generally be at least middle-aged. There is also the sphygmomanometer to aid us; for whereas high blood-pressure from vaso-constriction is the essence of the one condition, low blood-pressure from vaso-dilation is characteristic of tubercle, even in its earliest stages. It has been well said that a persistent dyspnœa which cannot positively be assigned to a definite cause is almost certainly tuberculous.

[1] See p. 220.

In weighing the evidence for and against the presence of tuberculosis in any particular case, the importance of the condition of the bronchial glands cannot be overestimated. They constitute the first line of defence where the primary infection comes by way of the air-passages, so that they tend to show a very early reaction to any disturbing influence. It is unfortunately impossible to examine these glands during life, and they may therefore attain to a considerable size before they hoist signals of distress. There are, nevertheless, two signs for which it is our duty to search whenever there is any suggestion of tuberculous involvement. One of these is *slight paresis of a vocal cord.* Generally, but not invariably, it is the left cord which is thus affected, for the same reason that it is affected in aneurism—namely, on account of the anatomical disposition of the left recurrent laryngeal nerve. In a few cases, however, it is, for some unexplained reason, the right cord alone which is affected. The other symptom is also associated in our minds with aneurism, and is doubtless due to pressure upon the sympathetic—namely, *inequality of the pupils.* This sign, like many of the others which we have been considering, can only be regarded as tending to confirm a suspicion otherwise aroused, more especially as it is undoubtedly present in many people who are perfectly healthy.

A history of a constant succession of colds, to which reference has already been made, is very suggestive of

early tuberculosis. This fact is now very generally accepted, but it is unfortunately as generally misinterpreted. It does not mean, as is commonly supposed, that the person is originally or hereditarily unusually susceptible to the influence of the bacillus, but it indicates that the patient is living in unwholesome surroundings, which depress his vitality and render him a ready prey to microbic invasion. Such are the people who wear flannel next their skins; who in fine weather make a virtue of sleeping with the window 'a little bit open at the top'; who know that they are in a 'draught' because it makes them sneeze—who, in short, live thoroughly unwholesome, coddling lives, and thus cultivate within themselves an atmosphere, both physical and moral, in which the bacillus flourishes and multiplies exceedingly. A constant succession of colds, therefore, has this degree of pretuberculous importance—that it implies a mode of life in which all aerial microbes are afforded abundant opportunities, with the result that the soil is suitably prepared for the reception of the bacillus of tubercle whenever the latter should think fit to advance. To 'live cleanly,' so far as the air-passages are concerned, is not only to avoid tubercle, but to avoid also the constant catarrhal attacks which are ignorantly attributed to draughts and chills.

It has now been taught for some years that *pleurisy* is a tuberculous manifestation. I should be very sorry indeed to think that all pleurisies were of that

nature, and I am quite convinced that it is not so. It is nevertheless right that we should regard a person who has had a definite pleural effusion with a certain amount of anxiety. There is, however, one form of pleural effusion which is to be regarded with very special anxiety, and that is the form which comes on without pain, fever, cough, or any of the other signs which usually proclaim the onset. The patient feels unwell rather than positively ill; his only complaint is dyspnœa; but when his chest is examined, one pleura is found to be full of fluid. This stealthy form of pleural effusion may follow some definite pulmonary disease, or it may occur independently of any previous illness. It is perhaps rare, but when it does occur, it almost invariably connotes tuberculosis. When we do meet with it, therefore, we do well to treat it with all the circumspection which its true inwardness demands.

When suspicions have once been aroused, it is, of course, our duty to institute a minute search for anything by which they may be confirmed. The lungs should be examined for weak breathing, especially at the bases; for harsh or cog-wheel breathing, especially at the apices; and the possible presence of enlarged lymphatic glands, more especially in the neck and axillæ, should engage our attention. The details of these matters are carefully reviewed in most of the text-books, so that they need not be considered here.

An accessory diagnostic aid which has the double merit of helpfulness and ease of application is the *ulnar reflex*.[1] The patient's forearm is bared and the arm placed in the flexed position, with all the muscles, especially those of the fingers, fully relaxed. If a pin be now sharply drawn along the whole length of the ulnar side of the forearm from elbow to wrist, in most tuberculous cases the abductor minimi digiti will contract, and cause a distinct reflex wrinkling of the hypothenar eminence. This response of the abductor minimi digiti, while it cannot be called pathognomonic of tuberculosis, may nevertheless be regarded as confirmatory evidence of the strongest description. It is very seldom present in conditions other than tuberculosis, but is by no means always present in cases which are undoubtedly tuberculous. The response has seemed to me to be more readily elicited in those accustomed to use the small muscles of the hand, and very difficult to obtain in those who are engaged chiefly in coarse employment. Like many other valuable signs, there is doubtless a certain degree of ambiguity in connection with it. When it speaks, within certain limits it speaks true; but when it does not speak, we must not allow ourselves to be lulled by its silence into any false sense of security.

When all the clinical methods have been exhausted we can, when still in doubt, carry our appeal into other, though not necessarily higher, courts. It is

[1] Phipps Institute, second Annual Report. Dr. J. J. Galbraith (*Practitioner*, June, 1907).

scarcely necessary to mention an examination of the sputum for the presence of bacilli, because the importance of such a procedure, if overlooked by the medical man, is sure to be remembered by the patient or one of his friends. At the stage which we are now considering, however, it is only right to say that such an examination would almost certainly prove negative.

A laboratory method which is more likely to give positive information is that of estimating the opsonic index. It is, of course, by no means always possible to avail ourselves of the great advantage of this means of diagnosis, but where it is possible it should always be resorted to.

There remain two methods to be considered, the one of which comes to us from Germany and the other from France. The first is von Pirquet's 'cuti-reaction,' which is obtained by vaccinating the skin with a 1 per cent. solution of tuberculin. In a healthy person this produces no effect, but in the tuberculous, the vaccinated area becomes red, swollen, and occasionally pustulous, within twenty-four hours, returning to normal again in from five to ten days. This method is very valuable in children under ten years of age. In adults it is apt to be misleading, for the reason that in the majority of persons over ten years of age a more or less positive reaction is said to ensue. The second is the plan advocated by Professor Calmette, of Lille. A drop of a 1 per cent. solution of dried tuberculin is placed in the patient's

eye. In a healthy person no reaction ensues, but in the tuberculous there follows the 'ophthalmo-reaction' —that is, an acute catarrhal conjunctivitis. The objection to this method is that the conjunctivitis is apt to be so acute as to endanger the eye itself. Very serious results have been reported in several cases.

ADDITIONAL FORMULÆ.

Nasal Washes.

Lotions intended for cleansing the nose may be used as simple hand-washes, or placed in a nasal douche, irrigator, or spray. The nasal douche of any apparatus on the siphon principle is to be avoided, the great and continuous pressure exerted rendering its use dangerous. A very simple method is to sniff the lotion from the palm of the hand or from a shallow cup or bowl up through the nose, letting it pass well into the throat and returning it through the mouth. This should be practised before rather than after meals, as it may excite retching or even vomiting. About an ounce and a half of solution should be used at each time, and it should be employed comfortably warm (about 100° F.). The use of a nasal irrigator should, however, where possible, always be substituted for the above.

A spray may also be used, but it is not nearly so effective as a douche. An instrument giving as coarse a spray as possible should be chosen.

The following formulæ have stood the test of time:[1]

℞. Sodii bicarb. ... ... gr. iii.
Sodii biborat. ... ... gr. iii.
Acid. carbol. ... ... gr. i.
Sacch. alb. ... ... gr. v.
Aquam ... ... ad ℥i.

M. et solve. Detergent.

℞. Tr. benzoin. co. ... ... ♏v.
Sodii biborat. ... ... gr. v.
Sacch. alb. ... ... gr. v.
Aquam ... ... ad ℥i.

M. Sedative.

Seigle's steam spray producer is a very useful apparatus when a warm spray is preferred. Used in this apparatus, the following was a favourite combination of the late Mr. Arthur Durham's in the treatment of 'hospital throats':

℞. Boracis... ... ... ℥iss.
Acid. boric. ... ... gr. xl.
Tr. iodi ... ... ℥ss.
Liq. morph. hydrochl. ... ... ℥i.
Glycerine ... ... ℥i.
Aquam ... ... ad ℥viii.

M.

This may be used for ten minutes every hour, and will be found very soothing.

Gargles.

About half a fluid ounce should be taken in the mouth for each act of gargling, and this should be

[1] See Pharmacopœia of the Hospital for Diseases of the Throat.

repeated four times on each occasion. Gargles should be used about every four hours.

℞. Potas. chlorat. ... ... gr. xii.
Sodii bicarb. ... ... gr. vi.
Potas. bicarb. ... ... gr. vi.
Aquam ... ... ad ℥i.

M. Ft. garg. Detergent and sedative.

℞. Resorcin ... ... gr. x.
Aquam ... ... ad ℥i.

M. Ft. garg. Antiseptic.

The following is a useful snuff:

℞. Menthol ... ... gr. viii.
Iodol ... ... gr. lxxx.
Acid. boric. ... ... gr. cc.
Sacch. alb. ... ... ℥i.

M. Sig.: To be used as a snuff.

Cough Mixtures.

To allay Tickling Cough.

℞. Tr. camph. co. ... ... ℥ii.
Oxymel scillæ ... ... ℥ii.
Syr. tolu. ... ... ℥ii.
Glycerin. ... ... ℥ii.

M. Dose: 1 drachm.

℞. Heroin ... ... gr. i.
Acid. hydrocyanic. dil. ... ... ♏xxx.
Oxymel scillæ ... ... ℥ii.
Syr. limonis ... ... ℥ii.
Aquam ... ... ad ℥i.

Dose: 1 teaspoonful.

An exceptionally agreeable mixture is that sold by Ferris and Company of Bristol under the name of syr. pectoralis rub.

A useful lozenge is:

℞. Menthol ... ... gr. ½
Pulv. glycyrrhizæ ... ... gr. ii.
M. Ft. 'nigroid.'

Influenza.

Dr. J. C. Ross, of Manchester, writing in the *Lancet* (November 3, 1906), speaks in the highest terms of the effect of the oil of Ceylon cinnamon bark in the treatment of this condition. The earlier the treatment is commenced, the more satisfactory are the results; but, however late in the disease the oil is administered, it never fails to do good. It allays the subjective sensations, rapidly reduces the fever, and prevents sequelæ. Twelve drops of the oil in a wineglassful of water are given immediately, and the dose is repeated in an hour. Two hours after the second dose 10 drops are administered, and then 10 drops every two hours until the temperature falls to normal. After this 10 drops are given three times a day for three days. Other writers appear to have had equally favourable results from this line of treatment, which seems well worth a trial.

Chronic Bronchitis.

In the treatment of the chronic winter cough of the aged, attended by copious expectoration, Sir Richard Douglas Powell[1] recommends the following:

℞. Liq. picis aromat. (Bell) ... ʒii.
Glycerini ... ... ʒiv.
Ext. liq. glycyrrhizæ ... ... ʒiss.
Spts. ammon. aromat. ... ʒiv. to ʒvi.
Tr. cardam. co. ... ... ʒiv. to ʒvi.
Aq. chloroform. ... ... ad ʒviii.
M. Sig.: A sixth part thrice daily.

[1] 'Senile Respiratory Disorders,' *The Hospital*, December 7, 1907.

CHAPTER II.

INDIGESTION.

I INTEND in this chapter to confine myself to the consideration of those forms of dyspepsia which are not of organic origin. The dyspepsias which arise in association with cancer, with ulcer, with hepatic and renal cirrhosis, with pulmonary tuberculosis, and other forms of structural disease, are exhaustively considered in the text-books, whereas the purely functional dyspepsias—the dyspepsias, that is, whose symptoms are due to such faults as those of secretion and motility—though far more frequently encountered in daily practice, are not so considered. These cases occur in people who are for the most part otherwise healthy, who are impatient of the disabilities and discomforts which the malady imposes upon them, and who are impatient also of anything short of prompt and complete relief. Their successful treatment is, therefore, a matter of considerable importance.

To this end our first care must be to learn to classify them properly. In view of the multiplicity of qualifying and would-be distinctive adjectives which are generally found in connection with the

term 'dyspepsia,' this would not at first seem to be a simple matter. In quite a recent text-book the varieties of gastric indigestion are given as follows: atonic, gouty, renal, irritative, flatulent, and acid; and reference to other text-books would in all probability reveal several more. But, in that they suggest essential distinctions, these terms are in reality misleading. It is better, therefore, to discard them altogether and to classify functional dyspepsias under two heads only—the sthenic and the asthenic. These two present distinct and definite clinical types, with different pathology, different symptomatology, and very different treatment. All else is chaff and dust, which let the wind blow whither it listeth.

But before we proceed to the details of this classification, it is necessary to consider briefly the main facts of gastric digestion in the light of the researches of Pawlow and others, which have recently been admirably crystallized in a short paper by Dr. Langdon Brown.[1]

We know that the masticated and insalivated food passes from the mouth along the œsophagus into the stomach, where it is acted upon by pepsin and HCl, and the arresting feature in connection with the above-mentioned researches is the prominent part which, in their light, must henceforth be assigned to the action of HCl. It used formerly to be believed that pepsin was the predominant partner

[1] 'On the Rational Treatment of Gastric Disorders,' *Practitioner*, October, 1904.

in this association; it is now recognised that HCl is of infinitely more importance. The presence of the acid is essential to the activity of the ferment, and if HCl is not present in sufficient degree, no conversion of the food can possibly take place. The mass becomes a mere mechanical irritant to the mucosa, and excites only the outpouring of alkaline mucus. This in its turn surrounds the mass and renders its permeation by the digestive fluids still more difficult. But this is not all. HCl, which is thus seen to be necessary to gastric digestion, is by the above-mentioned researches shown to be necessary also to pancreatic digestion. 'Bayliss and Starling have shown that the hydrochloric acid of gastric juice acts on the *pro-secretin* stored in the intestinal mucosa to form *secretin*, a specific stimulant to the flow of pancreatic juice. . . . Therefore, if there is not a due secretion of acid, pancreatic digestion is impossible.'

Now, we know that the functions of the pancreas include the digestion of fats and the elaboration of such of the carbohydrates as have escaped digestion by the saliva, so that it is evident that the absence of a proper quantity of HCl in the gastric process entails serious effects not only upon the digestion of proteids, but upon the digestion of all the proximate principles of food, proteids, carbohydrates, and fats. It is therefore impossible to overestimate the importance of the presence in full force of this constituent of the gastric juice.

Let us now look at the other side of the picture, and consider for a moment what happens when the hydrochloric acid, instead of being deficient, is excessive in quantity—a state of matters which, as we shall see presently, may be the result of various causes. In the normal person no more gastric juice is secreted at any individual meal than is necessary to the digestion of that meal, so that in a certain time after the meal is finished the secretion slows off and eventually ceases.[1] If the stomach supplies too much juice, or if the supply is continued beyond the limits of the digestive requirement, the food-mass becomes too acid to be allowed into the duodenum. The pyloric sphincter therefore contracts and prevents the passage of the food out of the stomach until the bile and pancreatic juices are present in quantities sufficient to neutralize its acidity. This may take some hours, and the gastric mucosa and nerve-endings are, during the interval, subjected to continual irritation, which varies, of course, in degree, according to the amount of acid present in excess.

Now, it is possible to bring all cases of functional dyspepsia under these two heads — those in which hydrochloric acid is deficient and those in which it is excessive. And, first, it is necessary to remember that the *causa causans* of the dyspepsia is the same in both—that is, the retention of food in the stomach long after that viscus ought to have finished with it. In both cases the mass becomes a species of foreign

[1] *Vide* Starling, Croonian Lectures, 1905.

body, giving rise directly to pain, the outpouring of mucus, and the development of flatulence; and indirectly to languor, sleeplessness, and irritability of temper. These symptoms, then, are common to both classes, and indicate merely that we have a dyspepsia to deal with. They are liable to be present in any and every case of indigestion, and consequently they afford no assistance in classification.

As bearing on this fact, it is well to remember that there is a line of treatment which, in so far as it is successful at all, is equally successful in both. This is the practice of giving alkalies before meals. Alkalies were originally given before meals on the supposition that they excited the flow of hydrochloric acid and pepsin in the stomach. As the practice gave relief to a very large number of dyspeptics, the supposition was held to be correct until the researches already referred to conclusively proved that, so far from promoting the flow of gastric juice, the alkalies very materially retard it.

How, then, are we to explain the benefits which have admittedly followed the practice of prescribing alkalies in all forms of dyspepsia? In the light of what we have already seen as to the mechanism of dyspepsia, the explanation is not very far to seek. The mass which tarries in the stomach (whether the tarrying be the result of too little hydrochloric acid or of too much) sets up an irritation, which in its turn provokes the outpouring of mucus and the development of flatulence, the evil effects of

which are still present when the time for the next meal has arrived. If, however, just before that meal is taken—say half an hour before—we put into the stomach a draught of water containing an alkali, we are applying lavage to that stomach—we are washing it out with a solution which is of all others the best calculated to remove the sticky mucus which is adhering to its walls and occluding the mouths of the secreting glands.

Herein, then, resides the efficacy of the practice of giving alkalies before meals—the organ is relieved not only of the mucus, but also of the undigested residue of the last meal, and is thereby cleansed and prepared for the reception of the next. And, as I have said, it matters nothing in this connection which form of dyspepsia we are dealing with, for in both there are undesirable matters to be removed, and in the treatment of both, a clean stomach for each meal is a great desideratum.

One practical point emerges from these considerations, namely, that if our desire is to wash out the stomach, we should see to it that the fluid is not stinted. The alkali — say 10 grains of sodium bicarbonate—should therefore be dissolved in, or immediately followed by, a full half-pint of water, preferably hot.

In one other respect, and in one other only, is it unnecessary, from the point of view of treatment, to distinguish between the two forms of dyspepsia—I mean the freeing of the primæ viæ. Above all

things, let the state of the bowels engage the most serious attention. The presence of constipation will obscure every issue and nullify every therapeutic effort. The best initial measure is undoubtedly a dose of calomel. This drug is not only a purgative, but it is also the very best of all intestinal antiseptics. Further, the excretory function of the skin should not be despised. It is too large a question to be discussed here, but there are many facts which point to the conclusion that some of the more obscure phenomena of indigestion are to be explained by assuming that defective cutaneous activity reacts in a special manner upon the gastric secretions. Be this as it may, a hot bath or a hot wet pack at the onset of treatment will often make all the difference between prompt and tardy relief.

Now how are we to distinguish between these two forms of dyspepsia, the sthenic and the asthenic? There are certain marked differences both in the type of patient and in the nature of the symptoms which cannot fail to strike the careful observer. The sthenic form occurs in people who seem otherwise to be in robust health — people who are for the most part strong, active, and energetic, and who are seldom teetotallers. The asthenic form appears in weakly, nervous, convalescent, or overworked persons who may be teetotallers, but who are generally tea-drinkers. The one is essentially an active, positive, the other a passive negative, type; and the distinctions between the

symptoms are in consonance with these characteristics. The sthenic tongue is firm and generally furred; the asthenic is flabby, frequently indented at the edges, and generally clean and glazed. The sthenic pulse is slow and full, the asthenic quick and feeble. The sthenic appetite is voracious and ever present; the asthenic is weak, capricious, and often absent. In the sthenic, the discomfort consists of a sense of epigastric fulness; in the asthenic, it consists of actual pain in the epigastrium striking through between the scapulæ. In the sthenic, a full meal relieves the symptoms; in the asthenic, it aggravates them. In the sthenic, the mental state is one of irritability; in the asthenic, it is one of depression. But perhaps the most striking, as it is certainly the most diagnostic, distinction is presented by the period of onset of the symptoms. This in the sthenic is delayed until towards the end of the digestive process—that is, from four to five hours after a full meal; whereas in the asthenic the discomfort, always more or less present, becomes acute within half an hour of the ingestion of food.

There is one symptom which is often mentioned in connection with dyspepsias of all sorts which, nevertheless, occurs only in the sthenic form—namely, heartburn. It is by no means always present, but when it is there can be no shadow of doubt as to the class to which the case belongs. The same may be said of pyrosis or the gushing of alkaline fluid from the mouth. This fluid is in reality saliva

of a rather higher alkalinity than normal, and its secretion represents an effort on the part of Nature to relieve the symptoms by introducing an alkali into the stomach. It only occurs in very severe cases, but when it does occur the diagnosis is no longer in doubt.

The matter of differentiation is not, however, always so easy as the above distinctions would seem to indicate. It must be remembered that we are dealing almost exclusively with subjective phenomena; that not all patients are intelligent, and that most dyspeptics tend to exaggerate their symptoms. But, fortunately, where, after due consideration, a doubt does remain in our minds as to whether we are dealing with a sthenic or an asthenic case, it is speedily set at rest by the results of treatment. For, as will be readily understood from the essential features of the two conditions, what will relieve the one will tend to aggravate the other. If, for example, we give a dose of HCl to a patient suffering from sthenic dyspepsia, we thereby increase the amount of the offending material, and add conspicuously to his miseries; and, similarly, if to a stomach which is crying aloud for HCl we respond by administering an alkali, our interference can have but one effect—that, namely, of aggravating the existing mischief. This refers, of course, to medicines given after meals.

As I have already pointed out, medicines given before meals have the effect of washing out the stomach, but they exercise no influence whatever

either upon the secretion of gastric juice or upon the digestion of the food itself. Effectually to treat either form of dyspepsia, then, it is necessary to rely absolutely upon the action of the drugs which are introduced into the stomach after the meal is taken.

Let us now take a case of **STHENIC DYSPEPSIA**, and see how it should be treated. We will assume the patient to be a man of middle age who has at one time been fond of athletics, but who has been obliged by business exigencies to give them up, who is capable, hard-working, and energetic. He complains of epigastric discomfort after food, flatulent eructations, and mental irritability. The symptoms are not pronounced until some time has elapsed after a meal; indeed, he not infrequently associates them with the period *before* a meal, and may attribute them to hunger, a theory which obtains support from the fact that a feeling of 'sinking' in the epigastrium is often present, and that he is always better immediately after he has fully satisfied his rather vigorous appetite. He dines at 7.30 p.m., and is very often awakened between four and five in the morning with heartburn, pyrosis, sneezing, hiccoughing, asthmatic attacks or other troubles, which, however, rapidly subside as soon as he is able to 'disperse the wind' of which his stomach appears to be full.

In the daytime he is liable to suffer so much from palpitation that he feels sure there must be something wrong with his heart.

The first thing to be done with such a man is to

clear his primæ viæ. He should be given a dose of calomel (remembering that those of dark complexion bear this drug better than those who are fair); he should be ordered a turkish bath, an electric light bath, or an ordinary hot bath, and induced, if possible, to take some daily exercise in the open air, or at least at the open window. The unwisdom of wearing wool or flannel[1] next his skin should be explained to him, and he should be enjoined to masticate his food adequately. These and other warnings suggested by the special circumstances of the case must be emphasized, but the great, the paramount, the urgent need in such a patient is for an antacid to be taken either as soon as his symptoms commence, or, if possible, immediately before their onset.

The antacid which is most popular is the bicarbonate of sodium, but this salt is an antacid pure and simple, and is possessed of no sedative properties. It also has the disadvantage, especially where flatulence is troublesome, of increasing the amount of gas in the stomach. What is required is an antacid agent which is free from this objection, which at the same time is possessed of sedative properties. Such an agent is bismuth. There have been many differences of opinion regarding the merits of this drug, even so great an authority as Sir William Roberts going so far as to deny that it was an antacid at all. Sir Lauder Brunton, Dr. Burney Yeo, and other authorities, however, appear to esteem it very highly,

[1] See Chapter VII.

and this view is supported by most of those who have made a systematic trial of its action. The disappointments attending its use in suitable cases have been almost certainly due to its employment in insufficient quantities. The ordinary B.P. doses are utterly useless; the minimum which I employ is: of the subnitrate 25 grains (B.P. 5-20), and of the liq. bismuth. ammon. cit. (B.P. 30-60) 2 drachms.

It is these two preparations which I have learned to appreciate most highly. The subnitrate may be given either in cachet form, or suspended in a mixture. When prescribing it as a cachet I generally combine it with that excellent sedative, oxalate of cerium (whose B.P. dose of 2 grains is also ridiculously inadequate), thus:

℞ Bismuth subnit. ... ... gr. xxv.
Cerii oxalat. ... ... gr. x.
M. Sig.: Ter die post cib.

If, as is not infrequently the case, the patient has a gouty tendency, it is well to add 5 grains, or a little more, of pulv. guaiaci to each cachet, but it not infrequently happens that the 'little more' is found to produce griping, purging, or both. Another drug which might be added to such a cachet is bicarbonate of sodium. It increases the alkalinity, but it increases also the bulk of the cachet and the quantity of gas in the stomach.

Although the subnitrate is frequently prescribed in a mixture (20 grains of the salt to 20 grains of pulv.

tragacanth. co.), it is not wise to do so. The carbonate acts nearly as well, and does not tend to decompose as the subnitrate does. On no account should the subnitrate be placed in a mixture with bicarbonate of sodium. The decomposition of the former leads to CO_2 being evolved from the latter, and explosions are apt to occur.

If it is desired to give bismuth in a fluid form, the liq. bismuth. ammon. cit. should be used. I am in the habit of combining it (as in the cachet) with a sedative—*i.e.*, hydrocyanic acid—thus:

℞. Liq. bismuth. ammon. cit. } ... ... āā ʒii.
Syr. pruni virg. }
Aquam ... ... ad ʒi.
Misce.

This makes an agreeable and palatable mixture; but if, with a view of correcting any gouty tendency, we add, say, ʒss. tr. guaiaci ammon., we must remember to suspend the latter in 40 grains of mucilage of acacia, and even then the mixture will be deprived of its elegance. There is no objection to adding bicarbonate of sodium to this combination, but there is really no necessity to do so, for it is already sufficiently alkaline.

Now, whichever form is decided upon, the cachet or the mixture, the important point to remember is that the proper time for its administration is some time after food. The length of time which should be allowed to elapse between the meal and the taking of the remedy depends, of course, upon the size of the meal. A full

meal will take five hours to digest, and will use up a great deal of HCl. A light meal, especially if it be poor in proteids, will use up very little acid—that is why sthenic dyspepsia is so much more common after light meals—and the surplus will want neutralizing relatively soon. It will want neutralizing sooner after breakfast than after luncheon, and sooner after tea than either. After a full dinner the symptoms frequently do not show themselves until about 4 or 5 a.m., and may then, in addition to pyrosis and heartburn, take the far more obscure forms of hiccoughing, sneezing, asthmatic, and even anginal attacks. The tendency of any symptoms, however little connected with the stomach they may at first sight appear, to recur regularly at 4 or 5 a.m. should give rise to a suspicion that dyspepsia is at the root of the mischief.

It is probable that much of the success which has attended the practice of giving alkalies before meals has been due to the fact that the period immediately preceding one meal is the period which witnesses the close of the digestion of the last—the period, that is, in which there is surplus acid waiting to be neutralized. However that may be, there can be no doubt that the administration of alkalies, and especially of bismuth, at a suitable interval after food, offers a means of relief in sthenic cases which is practically unfailing, and I would go so far as to say that if relief is not obtained by such means, then the case is certainly not a dyspepsia of the class under consideration.

A line of treatment suggested, or at any rate recommended, by Sir William Roberts is that of prescribing lozenges to be sucked by the patient as soon as the symptoms have developed. Lozenges have the advantage of portability, and the sucking of them insures that the superfluous acid in the stomach shall be neutralized by its physiological antidote, namely, saliva. It is curious to note that the saliva secreted during a sthenic dyspeptic attack is hyper-alkaline. It is as if Nature herself were suggesting the best means of curing the condition, for not only is the reaction enhanced, but the amount of the fluid is markedly increased in those attacks which the presence of pyrosis and coryza proclaim to be of more than usual severity.

The lozenge which Sir W. Roberts prefers is the trochis. bismuth. of the B.P., which contains 3½ grains of chalk and 2½ grains of carbonate of magnesia; but, true to his disbelief in bismuth, he suggests that this ingredient should be omitted. However, so long as the lozenge is not acid, it probably matters little of what it is composed. The efficacy of this line of treatment resides in the use which is very properly made of the alkaline saliva in neutralizing the offending acid. Even the mechanical irritation of a clean pebble carried in the mouth is useful in this direction, and patients should be told to remember it in the presence of an attack where no alkalies are at hand.

There is a point in prophylaxis which ought always to be brought to the notice of a sthenic dyspeptic.

The source of the muriatic acid present in the gastric juice is believed to be common salt; patients should, therefore, be told to eschew salted meats, and be warned to relinquish the habit of adding chloride of sodium to their food. It is merely a habit, and few have any difficulty in relinquishing it. If the supply of the raw material is checked, the over-production of the manufactured article will cease.

And this consideration carries another lesson, which is this: The natural mineral waters which are so largely imported into this country have justly earned for themselves a great reputation in the treatment of chronic and occasional constipation. As nearly all these waters contain chloride of sodium, and some of them in very large quantities, it is inadvisable to recommend them to patients whose constipation is associated with sthenic dyspepsia. To relieve the difficulty in such cases recourse must be had to other means. Cascara is very serviceable, but I prefer either of the following, given three times daily before meals, followed by a glass of hot water:

℞.	Sodii sulphat.	...	...	...	gr. xxx.
	Sodii bicarb. ...	...	...	...	gr. x.
	Tr. nucis vom.	...	...	...	♏v.
	Ess. menth. pip.	...	...	...	♏ii.
	Inf. gent. co. ...	...	...	...	ad ℥i.

M.

℞.	Magnes. sulphat.	...	...	...	gr. xxx.
	Magnes. carb.	...	...	...	gr. x.
	Tr. nucis vom.	...	...	...	♏v.
	Ess. menth. pip.	...	...	...	♏ii.
	Inf. cascarillæ	...	...	...	ad ℥i.

Either of these mixtures takes the place of that containing sodium bicarbonate suggested above for 'lavage' of the stomach, and if persevered with, may be relied upon to dispose of the constipation.

Among those who suffer from sthenic dyspepsia, there are a very large number of people (mostly maiden ladies and widows) who are persuaded that they want 'supporting,' that their condition is due to debility, and that large and frequent meals are essential to their continued existence. Their miseries towards the end of digestion, and the prompt relief which is afforded by another meal, lend an amount of support to this view which no skill in the art of persuasion is in some cases sufficient to combat. If the real state of affairs is pointed out to them, they write the doctor down as an unsympathetic person, who is devoid both of perception and therapeutic instinct. Nevertheless, the attempt should always be made, for it is better to lose a patient than to share in the responsibility for the arterio-sclerosis and other serious manifestations which sooner or later provide a fitting Nemesis for these misguided people.

And this leads me to say that mistakes in differentiating between the two kinds of dyspepsia generally take the form of diagnosing as an asthenic case one which is in reality a sthenic case. Patients who pity themselves readily dwell upon the weakness which they feel, and, believing their symptoms to be due to debility, seek, by graphic and heartrending descriptions, to persuade the doctor to the same view.

This is a pitfall against which it is very necessary that we should be on our guard. When there is any doubt about the nature of the case, it should be treated as if it was sthenic, by the exhibition of alkalies and sedatives. The reason for this is that alkalies and sedatives, though they may do an asthenic case no good, will certainly not aggravate the symptoms; whereas acids given to a sthenic dyspeptic immediately give rise to an acute exacerbation of all the troubles from which he was previously suffering.

There is one other point to remember in this connection, and that is the futility of treating sthenic dyspepsia by any remedies directed to the stomach alone until we are quite certain that the cause of all the trouble does not lie in the transverse colon. When we recall the anatomical relations of this portion of the large intestine to the great curvature of the stomach, it is not difficult to believe that an irritation which has its source in the one will be readily communicated to the other; and I have repeatedly found, clinically, that a dyspepsia of the sthenic type, which had resisted every combination of alkali and sedative, responded promptly to calomel and an enema properly administered.

Sir William Roberts divided the dyspepsia of substantially healthy people into the *atonic* form and the *irritative* or *acid* form, which is practically the same classification as that which is here advocated. Of the latter form he writes fully and instructively;

but with the bias natural, perhaps, to one who has suffered much from one form, he dismisses the other, the atonic, in a few words as scarcely meriting the name of dyspepsia. From this view, and from the theory which would confine the term 'irritative' to either form, I must express my dissent. Atonic or asthenic dyspepsia—the dyspepsia, that is, whose essential condition is a deficiency of HCl in the gastric juice—is an exceedingly common condition, more especially among the working classes and among neurotic people of all classes; and the symptoms which such cases have in common with sthenic dyspepsia, the discomfort and the flatulence—albeit brought about in the one case by excess of acid and in the other by the presence of undigested food—are due to precisely the same condition, namely, an irritable state of the gastric mucosa.[1]

This element of irritation which the two forms have in common is important because failure to appreciate it seems to lie at the root of much of the confusion which prevails on the subject. Where the symptoms of the two forms seem to overlap, they do so on account of this factor and its results, and when this is clearly understood the difficulties disappear.

Let us now look at a typical case of **ASTHENIC DYSPEPSIA**, and consider how it should be treated. The causes which may produce the condition are

[1] I purposely refrain from any discussion of the fermentation theory, for even if there be any truth in this theory, which I doubt, it cannot affect the above considerations.

numerous, and some of them are remote. Setting aside those which are obvious, such as convalescence from acute disease, it is well to remember that anything which gives rise to a constant leakage of nervous force is peculiarly liable to set up an asthenic dyspepsia. Such conditions as worry, uncongenial surroundings, nasal obstruction, and errors of refraction are among the most frequent, and it is safe to say that they are precisely those which are most commonly overlooked.

Let us, then, take as our type a married but childless woman of thirty, who is not exactly unhappy, but who has no definite object in life. She is lackadaisical rather than melancholy, with a dull complexion and spare frame. Her tongue is clean, but pale and flabby, and some of her teeth are defective She complains of a dull pain in the chest, which passes through to the back. The pain is always more or less present, but every meal, no matter whether it be large or small, intensifies it. She has very little appetite as a rule; though occasionally, when she forces herself to eat, it seems to improve after she has taken a few mouthfuls. She suffers from flatulence and palpitation, and is generally very constipated. Medicines may relieve the constipation, but they generally leave the discomfort and the flatulence unaffected. On examining her abdomen, we may find a movable kidney on the right side, and the muscles in the anterior abdominal wall will be found to be badly developed. She takes very

little exercise, and protests that she never feels up to it.

The treatment of such a case is not difficult. Having freed the primæ viæ and attended to the other details already mentioned as suitable to both forms of the malady, we turn to the measures of active treatment. Having regard to what we know to be the essential condition in this case—namely, deficiency of HCl in the gastric juice—the first indication is, clearly, to supply the deficiency. And in doing so we must be careful to give doses large enough to effect our purpose. The ordinary B.P. dose of ♏x. is altogether inadequate; the minimum dose which I employ is ♏xxv. This it is well to combine with strychnia and pepsin, as in the following:

℞. Acid. mur. dil. .... ♏xxv.
Liq. strychnin. ... ... ♏v.
Glyc. pepsin. ... ... ʒi.
Aq. menth. pip. ... ... ad ʒss.
M. Sig.: Thrice daily immediately after food.

To such a mixture may be added other drugs which the nature of the case may seem to demand. Quinine hydrochlorate, liq. ferri mur., liq. morph. mur., and liq. arsen. hydrochlor., are all of them preparations which are frequently of great assistance in such cases, and all of them are quite compatible, not only with each other, but also with the other ingredients in the mixture. The most useful of them is perhaps the morphia salt. In cases of long

standing, where the element of irritation is consequently very pronounced, the addition of ♏x. of the liq. morph. hydrochlor. is invaluable. It soothes the mucosa and enables it to tolerate the stimulating effects of the HCl and strychnine, which in its absence are liable to cause so much local disturbance as to bring the patient back with the complaint that each dose of the medicine aggravates her sufferings. It is scarcely necessary to dwell upon the great importance of deleting this ingredient from the prescription as soon as there is any prospect of doing so with impunity.

For the constipation, which is generally so prominent a feature in asthenic dyspepsia, the use of the natural mineral waters is not only unobjectionable—it is strongly indicated. The presence in them of common salt, which we have seen to be a contra-indication in sthenic dyspepsia, is here an advantage. Most of these waters are best taken in the morning (fasting), and their effect is enhanced by the association with each dose of a tumblerful of hot water.

Such are the broad lines on which most cases of functional dyspepsia should be approached. But even in uncomplicated cases it is more easy to make mistakes than the facts as above stated would lead one to expect.

It not infrequently happens that where there is a serious difficulty in coming to a conclusion as to whether the case is one of sthenic dyspepsia or its

opposite, it eventually turns out to be one which cannot, properly speaking, be placed in either category, but is due to some underlying cause which must be discovered and removed before either acid or alkali will have the desired effect. A large percentage of these aberrant cases are the result of causes which, for the want of a better term, we must call nervous or neurotic. Common instances are afforded by men on the Stock Exchange who lead strenuous and even exhausting lives, who are exposed to periods of depression, varied by sudden volcanic explosions of excitement and panic, in whom the philosophic calm so necessary to good digestion is hardly ever obtainable except at a foreign health-resort, where telephones cease from troubling and 'markets' are at rest. An instance drawn from another, though scarcely less familiar, sphere is presented by a young lady who once consulted me, with all the signs of asthenic dyspepsia, with this notable point of dissimilarity from the typical picture, that her acid symptoms began to trouble her as soon as the food obtained access to her stomach. The ordinary prescriptions of bismuth, soda, and hydrocyanic acid, in combination with laxatives, produced no result, and so at her third visit I got her mother out of the room and demanded to know the nature of the silent sorrow which I felt certain she was nourishing. It soon emerged in the shape of a secret engagement, which, should it leak out, would set the whole family by the ears. The combination of 15 grains of bromide of

potassium and 2 minims of Fowler's solution in water three times a day after food, coupled with a little worldly-wise advice, cured that dyspepsia in a few days.

One of the most common causes of aberrant dyspepsias is that which, for some extraordinary reason, is the one most commonly overlooked. So common is it, indeed, that one feels almost ashamed to mention it. I mean dental caries. The teaching of the schools—and I say this without any implied reflection—tends to the too exclusive cultivation of the obscure in diagnosis and the heroic in treatment, with the sad result that the obvious and common sensical become overlooked. Thus it happens that patients are suspected to be suffering from cancer, gastric ulcer, œsophageal stricture, hepatic, pancreatic, and even splenic, disease, when a few visits to a competent dentist will cause the disappearance of all their symptoms. We talk glibly of the gastro-intestinal toxins and their nefarious consequences, but we appear to think of them as lurking, brigand-like, in the inaccessible *rugæ* of the small intestine, when their real habitat is the commonplace cave of a decaying molar. That 'washing in Jordan' should never be a popular proceeding with patients is comprehensible, because patients are generally in an epic mood; but why doctors should avoid it as a prescription is less obvious. That the avoidance frequently impairs professional credit is a matter of common experience.

Another condition which is very closely associated

with intractable dyspepsias is nasal obstruction. No one can pretend that a nasal obstruction due to adenoids is now in danger of being overlooked. The very reverse is indeed the case, for adenoids are diagnosed, and even operated upon, in cases when they do not and never have existed. But that is by the way. Nasal obstruction may be due to causes other than adenoids, and such obstruction is a very common provoker or maintainer of a dyspepsia which fails to conform to either of the two regular types, and remains obstinate to treatment by their appropriate remedies. Such was the case with a man whom I have known for many years, energetic, hard-working, capable, who at unequal intervals suffered from attacks of what both he and I agreed to call 'gouty dyspepsia.' It was distinctly of the sthenic type, and the worst discomforts connected with it scarcely ever failed to yield to bismuth and soda. Nevertheless, even when taking the medicine he was seldom entirely free from flatulence, eructations, heartburn, and constipation. The enemy was always on his flank, to fall upon him unmercifully should he commit any dietetic indiscretion, or in the event of any extra pressure of work, and on the occasion of any mental anxiety. Matters continued thus for several years until he was married. Not long after that event he came to see me with one of the usual attacks, and told me incidentally that his wife complained that he not infrequently snored, and that, in connection with this complaint on her part, he had

himself noticed that he always awoke with his mouth open. I then, for the first time, tested his nasal airway, and found that it was practically blocked on the right side by a combination of spurs and a deviated septum. Since this condition was relieved, now over two years ago, he has never had any return of his trouble, or, if he has, it has been so slight in degree as to be readily amenable to ordinary treatment. This may seem an inconclusive story, but both he and I are quite convinced that the cause of his former troubles was the obstruction in his nose, an opinion which on my part is very strongly supported by other cases of a similar kind.

But if nasal obstruction is a common cause of obstinate digestive troubles, an even commoner cause is to be found in uncorrected errors of refraction. These errors give rise to eye-strain, and eye-strain in its turn provokes disturbances which are by no means limited to the eyes or their neighbourhood. The teaching of too many of the schools is to the effect that unless a person with a slight error of refraction complains of definite symptoms, then it is a work of supererogation to correct it. Such advice might be sound if all the symptoms of eye-strain were easily recognisable as such; but they are not. A person who is the subject of eye-strain may suffer from symptoms which neither he himself nor the vast majority of doctors would dream of referring to his vision.[1] It is begin-

[1] See Ernest Clarke, 'The Medical Aspect of Eye-Strain,' *Clinical Journal*, October 4, 1905.

ning to be recognised, perhaps, that headaches, supra-orbital and other local neuralgias, may be caused by visual defects, but it is seldom even admitted that dyspeptic troubles and many obscure and indefinable, but very persistent, miseries, which are either carelessly or ignorantly labelled neurotic, neurasthenic, or hysterical, may be due to the same cause. This attitude is not altogether surprising when we remember that, in order to produce these results, it is essential that the defect should be slight in degree; should be one, that is, which the patient himself, by contracting his ciliary muscle, can adequately correct. The grosser errors do not cause these symptoms, for the reason that no amount of ciliary contraction being sufficient to correct them, no effort is ever made. In the lesser degrees the effort, being successful, is not only made, but is maintained during the whole of the waking hours. It is this maintenance of muscular effort which is the crux of the whole situation, for the ceaseless and illegitimate contraction of the ciliary muscle means an equally ceaseless and illegitimate expenditure of nervous energy. The 'electric power' intended for the motors in the various organs is all monopolized by the visual. There seems nothing to determine which of these organs will be the first to cry out that it is being starved of its due amount of nervous energy, and much of the trouble arises from the fact that its cry is almost invariably misunderstood and misinterpreted. In the case of the stomach the responsibility is generally placed upon the diet,

which is pared and whittled both in quantity and quality until the fare of King Nebuchadnezzar may seem generous in comparison; while the organ itself is now soothed with papaveric caresses, and anon chastised with Chilian scorpions, in the vain hope that it may thus be induced to make bricks without straw; for unless the nervous energy or the motive power, or whatever else it may be termed, is prevented from leaking out through the crevice of that minor refractive error, the stomach will be deprived of its due share of this energy, with the result that symptoms in very sooth, though symptoms of an aberrant and baffling type, will continue to afflict the unfortunate possessor of the organ, in spite of acid and alkali, and in spite, too, of their all too common and ridiculous association in the same mixture.

So impressed have I been during the last ten years with this aspect of obstinate dyspepsias, that I now never fail to satisfy myself, at any rate in the case of a town-dweller, and more especially in the case of a town-dweller of over forty years of age, that an error of refraction is not at least a contributory cause in the case of troublesome indigestion which resists the ordinary remedies. If it is true, as I believe it to be, that the dentist cures more cases of indigestion than the physician, it is equally true that in the same direction the refractionist is more potent than the therapist.

A great many dyspepsias which are confidently assigned to the rubbish heap labelled 'neurotic' are

due to vaso-motor disturbances, and may thus be held to justify the label. The disturbance may take the form of an undue vaso-dilatation leading to a sub-normal blood-pressure, or to the opposite condition of undue vaso-constriction, causing a supernormal blood-pressure. It may, of course, be the result of faulty distributions of pressure, for which errors of vascular tone are not primarily or even mainly responsible, as in the case of mitral disease. It is scarcely necessary to refer to such cases, because the person who fails to examine the heart in a case of dyspepsia will fail to examine it in a case of chorea, and is diagnostically past praying for. It is the vascular disturbances which own no such obvious cause which give rise to difficulties. In the case of undue general vaso-dilatation the *modus operandi* is not difficult to follow. The patient is, so to speak, living under the constant influence of nitrite of amyl; his peripheral arteries are relaxed, and there is thus less blood available for the work of the internal organs. Consequently the appeal for more blood for digestive work on the part of the stomach is very inadequately responded to, and symptoms arise whose severity is in direct ratio with the degree of general vaso-dilatation. A dyspepsia which is due to this state of matters may always be relieved by causing the patient to assume the recumbent posture immediately after a meal, but it can only be cured by removing the cause of the general vaso-dilatation.

The opposite condition of unduly high blood-

pressure frequently, if not invariably, carries a gastric disturbance of some kind in its train. The causation of high blood-pressure in some, at any rate, of its aspects, is still a matter of speculation, but there seems no escape from the conclusion that it may be, and frequently is, due to endogenous toxins. These toxins would seem in the majority of cases to act slowly—so slowly, that the existence of the high pressure is not even suspected until it has left its inexorable mark upon the arteries in some important organ, whose resulting degeneration has produced the symptoms from which the patient seeks relief. Here, then, is another, and by no means the least weighty, of the possibilities which should engage our attention where we have an aberrant dyspepsia to deal with. The use of the manometer is becoming more general every day, and such cases will therefore be overlooked with decreasing frequency, to the credit of the profession and to the satisfaction of the patients.

Of the dyspepsias which result from high blood-pressure, the best instance is probably that which may be drawn from a consideration of what occurs at the menopause. The process of menstruation must be regarded as an excretory process, so that the commencement of the climacteric marks as a rule the commencement of a period of insufficient excretion. Add to this the consideration that the internal secretion of the ovary is believed, on sufficient grounds, to be both vaso-dilator and a toxin destroyer, and it is not surprising to find that at the 'gloaming of life,' as

the French poetically call it (*l'âge crépusculaire*), the blood distribution becomes deranged. The derangement shows itself as an elevation, which is always definite, and is not infrequently sufficiently alarming to warrant very active interference. For reasons into which it is impossible to enter here, this rise of pressure exercises a particularly unfavourable effect upon the vessels in the splanchnic area, and of these vessels it is, as one would expect, the gastric which show the greatest disturbance, with the result that dyspepsia, almost invariably of the sthenic type, is one of the commonest of the manifestations of the menopause. Any attempt to treat such a dyspepsia without very special attention to the state of the blood-pressure is to court certain failure, and in order to reduce that pressure we must bear in mind the above-mentioned factors in its causation.

The fact that an excretory organ has been lost, and that its absence is not yet compensated for, will suggest gentle stimulation of the other emunctories, of which the skin is in this connection by no means the least important. The absence of the internal secretion may be met by giving ovarian extract by the mouth, a procedure which I believe to be of the greatest benefit. Ichthyol in 5-grain pills is also useful, and is perhaps the best of all drugs for combating the vague subjective discomforts which are apt to appear at this time. When the blood-pressure is really high—*i.e.*, over 200 mm. Hg—and the above means fail to reduce it, I never hesitate to recommend

venesection. This little operation has in several cases within my knowledge been the means of a 'miraculous' cure of very troublesome climacteric dyspepsias.

I feel that I must not leave this question without a reference to a form of dyspepsia which is associated with the menopause, but which has none of the characters of that just noticed. The processes peculiar to the climacteric affect different women differently, but they seldom fail to produce an instability of the nervous system, which in extreme cases proceeds to definite insanity. Short of this, one of the forms which it assumes is an abnormal craving for sedatives, and if the craving is satisfied there is very apt to ensue an irritable condition of the stomach, which gives rise to symptoms of indigestion. The sedative usually employed is, of course, alcohol, with regard to which it is necessary to remember that its excessive devotees fly to it, not as a stimulant, but as a narcotic, and that it is narcotic only when taken in doses large enough to act as an irritant on the gastric mucosa. There is a great deal of secret drinking at the time of the menopause, even among those who up to that period have been strictly temperate, so that the possibility of such a factor being at work in producing or maintaining a dyspepsia should not be forgotten.

There is a condition which some, at any rate, of the manifestations of sthenic dyspepsia are liable very closely to simulate, and to which it therefore

seems desirable briefly to refer—namely, *angina pectoris*. Where sthenic dyspepsia is associated, as it not infrequently is, with some degree of gastric dilatation, symptoms resembling true angina are by no means uncommon. I have already referred to the fact that attacks of sneezing, dyspnœa, and the like, are in these cases very liable to occur in the early hours of the morning, and I have pointed out that these attacks are due to the irritation produced primarily by the excess of acid present at the end of digestion.

Now, it is not difficult to understand how the consequent flatulent distension of a somewhat dilated stomach will cause serious mechanical embarrassment to the heart, nor that, as a result, symptoms should ensue which are very suggestive of true angina. Add to this the fact that the patient frequently brings a history of pain in the chest, evoked by exertion, which radiates down the arms, and the suspicion of angina is necessarily deepened. It is important to remember, therefore, that all these symptoms are entirely compatible with functional gastric disturbance; and to prevent unnecessary alarm to the patient and his friends, it is well to avoid all mention of the more serious condition until the less serious can be excluded.

There are some facts which may aid us in arriving at a conclusion upon this point, which is liable to present difficulties not only because of the general resemblance between the symptoms, but also

because an attack of flatulence may be the starting-point of the first of a series of true anginal seizures. In the first place, then, it may be said that the constant presence of palpitation in association with the attacks is against the suspicion of angina and in favour of simple dyspepsia. In favour of dyspepsia, also, is the regular occurrence of the attacks in the early hours of the morning. When inquiry elicits that the pain on exertion occurs always after a meal and never when the stomach is empty, the fear of angina may be allowed to recede, and it may be dismissed altogether if an antacid taken at a suitable interval after meals is successful in preventing the attacks.

The occurrence of such symptoms, however, even when they are quite definitely dyspeptic in origin, should not be too lightly regarded. They are often associated with giddiness and other phenomena which occasion alarm to patients, and if the cardio-vascular condition be carefully examined, as it should always be, it is very seldom found to be in an entirely satisfactory condition. Setting aside the heart itself, whose state, when it is affected at all, is variable, and is always secondary to the changes which are present in the arterioles and capillaries, it is necessary to examine carefully into the state of the arteries. These will generally — one may say always—be found in a state of high tension, and the treatment of the dyspepsia by means of antacids will be only temporarily successful unless means be adopted

to insure that the intravascular pressure be permanently reduced. In order to reduce this pressure it is necessary to realize the nature of its cause. In nine cases out of ten this is the presence of toxins circulating in the blood. The toxins, by irritating the vessel walls, cause constriction of the muscular coats, and blood-pressure is at once increased. The real nature of the toxins which may give rise to this state of matters is not yet understood; but in the cases under consideration—those, namely, of sthenic dyspepsia—they are generally, if not invariably, the result of excessive meat-eating.

The first thing to do, then, is to impress upon the patient the necessity for abstention from meat foods; and the older the patient, and the more sedentary his mode of life, the more urgent does this necessity become. A general reduction of intake, in quantity as well as quality, is usually very desirable, and, in my experience, the meal which may be attacked with the best prospect of success is that which is taken at or about midday. This should consist of milk, eggs, cheese, fruit, and vegetables—of anything, in fact, which has not been killed—and it should be free from alcohol. So far as the meat at the evening meal is concerned, it is well to insist that it should be boiled, because it has been shown that boiled meats are much less liable to increase arterial tension than those which are otherwise treated.

To insure the adequate excretion of such toxins as may already be present, the bowels, skin, and kidneys

must be stimulated. Mercury is the best agent to employ for the first of these purposes. About a grain of calomel should be given every night for a week, followed each morning by a saline, and the saline should be continued for at least a week longer. Turkish and hot-air baths are useful for cutaneous stimulation, especially where they are combined with or followed by efficient massage. Even the ordinary hot bath, properly administered, is by no means without its value in this connection. For the stimulation of the kidneys the salts of potassium are to be preferred, and of these the iodide and the citrate are the best. Ten grains of the citrate with 5 grains of the iodide should be added to the mixture of bismuth above prescribed, and the patient should be directed to drink freely of Evian water between meals. Another excellent renal evacuant is theobromine.

The importance of these measures resides in the fact that a sthenic dyspepsia which is accompanied by high arterial tension is but a symptom of an underlying condition whose continuance is fraught with the utmost gravity to the patient. There is, as a rule, no difficulty in curing the dyspepsia; but if we allow ourselves to rest satisfied with such an achievement, and shut our eyes to the possibilities of dangers ahead—dangers such as granular kidney and general arteriosclerosis, which are two among many of the logical issues of sustained high arterial tension—the patient will have good cause to regret the promptitude

and completeness of the relief from his dyspepsia which he has obtained at our hands. This is the condition to which the term 'gouty dyspepsia' has been applied, and if we use the term to denote a dyspepsia of the sthenic type, which is merely a manifestation of a general condition of goutiness, which general condition demands our attention even more urgently than the dyspepsia, then the term is altogether unobjectionable. There is, however, very little advantage to be gained from the multiplication of adjectives.

Symptoms are often confidently attributed to dyspepsia which are in reality due to *ovarian irritation*. The dyspepsia is generally of the asthenic type, and is usually accompanied by nausea, frequently by vomiting, which may be very persistent, and occasionally by hæmatemesis. When a dyspepsia in a young woman proves intractable to the ordinary remedies, the probability is great that the cause will be found in the ovarian region. To the seeing eye there is something very characteristic in the appearance of one who is suffering in this way. The appearance does not lend itself to verbal description, but, when once observed, it is not easily forgotten. Undue brightness of the conjunctivæ in a person whose temperature is normal is very suggestive of pelvic disturbance, but this by no means exhausts the elements of which the 'ovarian' look is composed. If the existence of this possible cause of an indigestion be borne in mind, it is easy to verify our suspicions. Palpation over the ovarian regions will elicit tender-

ness, sometimes very extreme, on one or both sides. The best treatment consists in the repeated application of small blisters over the congested viscus, combined with free purgation and the exhibition of bromide of potassium. This kind of dyspepsia is frequently referred to as 'nervous' or 'neurotic.' It is not, of course, a dyspepsia at all. It is due to causes local to the pelvic organs, and unless these causes, which not infrequently comprise leucorrhœa and menstrual disturbances, are suitably treated, the remedies offered to the stomach will be wholly ineffectual.

There are two symptoms commonly associated with dyspepsia which, from the discomfort to which they may give rise, it is often necessary to treat during the interval which may have to elapse before their cause can be removed: the one is flatulence, the other is hiccough.

FLATULENCE may be either gastric or intestinal. The former is said to be due to fermentation in the stomach itself. Although there is good reason to believe that this is not the case, there is no doubt that the symptom is one which is nearly always present in every case of gastric derangement, from whatever cause arising. It may, on the other hand, be a pure neurosis, and is frequently provoked by worry and anxiety. In neurotic subjects and in mouth-breathers (as in the subjects of adenoids and deviations of the nasal septum) it is due to the swallowing of air. When this symptom is so

obtrusive as to demand treatment apart from its underlying cause, there are three remedies which can usually be trusted.

To those who believe in the fermentation theory, carbolic acid, 2 grains, made into a pill with 1 grain each of liquorice powder and powdered althea, and given three times daily, will probably appeal, and it certainly is often very helpful. In the form of sulphocarbolate of sodium (10 to 15 grains) the same remedy may be added to mixtures prescribed for the relief of the complaint which causes the flatulence. The sodium salt sometimes acts better than the pure acid.

An old and very reliable remedy is charcoal. This should be given in doses of at least a drachm three times daily. The drug which has seemed to me to be most trustworthy, however, is terebene: 10 or 15 drops may be put upon a lump of sugar for the patient to suck, or the same quantity may be given in a capsule three or four times a day. Whether by checking fermentation or by some other action, it is certain that few remedies possess so much power in relieving the distressing eructations to which some dyspeptics are liable.

Where the flatulence is intestinal, the treatment should be directed towards increasing peristalsis by means of nux vomica and belladonna. The condition is generally associated with atony, and care should be taken not to administer drugs, such as magnesium sulphate, which increase the fluid contents of the bowel without increasing peristalsis, unless the muscular

action is simultaneously reinforced either by drugs or massage.

Of all the remedies directed to the relief of this condition, nothing has seemed to me to compare with oil of cajuput. It should be given in doses of 2 minims, and may be combined in a pill with extract of gentian, or, when dissolved in a few drops of spirit, it can be added to any mixture. In the flatulence which is so liable to develop after operations in the neighbourhood of the rectum this remedy is invaluable.

HICCOUGH is due to a sudden more or less violent contraction of the diaphragm, and may be produced by irritation, either in the immediate vicinity of the muscle or reflexly from a distance. An attack may last for a few minutes only or it may be protracted over several hours, and it may recur at intervals for weeks, or even months. It is a common symptom of dyspepsia, more especially of sthenic dyspepsia; but it may also be due to organic affections of the stomach and intestines, such as carcinoma, and to hepatic disease, or appendicitis. It is a frequent accompaniment of the tympanites of typhoid fever. It may be excited reflexly by organic disease of the nervous system, such as meningitis, hydrocephalus, and intracranial tumours. In functional diseases it is common; hysteria, sudden shocks, and acute emotions providing a great many instances. It is not altogether unknown in epilepsy, and may occur in chorea. Certain constitutional conditions, especially gout, diabetes, gouty nephritis, and alcoholism seem to

create a strong predisposition to its development. So much is this the case that the absence of other obvious cause should lead one to suspect the operation of such an agent.

Hiccough is very often associated with pregnancy, and it may complicate Graves' disease or Addison's disease. When it appears in a person who is seriously ill, especially if it becomes persistent, it is a sign of evil omen, and should lead us to be very guarded in prognosis. Its most obvious mechanical cause is pressure on the phrenic nerve within the thorax, a condition which is most likely to be produced by dilatation of the aorta, pericarditis, or new growths.

Persistent hiccough, from whatever cause arising, is very distressing, not only to the patient, but to those around him, and it is necessary to allay it as soon as possible. Various means to this end have been suggested from time to time, including medicines to be taken by the mouth and applications of a stimulating nature to the epigastrium. Of the latter, warmth and small mustard-plasters are occasionally useful, and skilfully applied massage is frequently so. Of internal remedies, the best seems to be nitroglycerine in doses of $\frac{1}{100}$ of a grain upwards. It seems to act better when given in tablets than in the form of liq. trinitrini (2-5 minims), though I have used the latter with success. In either case the dose should be small and frequently repeated. Oil of turpentine is highly recommended by some. It should be given in doses of 10 minims mixed with mist. amygdal.

Ext. ergot. liquid in drachm doses, frequently repeated, has been very successful in some cases, and is always worth a trial where other things fail. It is generally conceded that morphia, chloral, bromide of potassium, and even the inhalation of chloroform, are useless. Ether by the mouth, however, sometimes proves effectual. Traction on the tongue will sometimes produce the desired effect. Forcible holding of the breath in deep expiration is useful in slight cases, as is drinking a glass of water with both ears and nostrils closed. Of all these means, however, nitro-glycerine is the most likely to be successful.

Musk (5 to 10 grains) in a pill with liquorice may also be tried. It is well spoken of by many, the only objection to its use being its great expense.

ADDITIONAL FORMULÆ.

Alkaline Mixture (Byrom Bramwell).

℞. Potass. bicarb. } ... ... āā ʒiii.
Sodii bicarb. }
Spts. ammon. co. ... ... ʒiv.
Tr. rhei ... ... ʒii.
Inf. calumbæ ... ... ad ʒvi.

M. Sig. : ʒss. in water, thrice daily, a quarter of an hour before food.

Mixture for Flatulence.

℞. Menthol ... ... gr. ¼
Spts. ammon. co. } ... ... āā ʒi.
Spts. chlorof. }

M. Sig. : One teaspoonful in water when required

CHAPTER III.

CONSTIPATION, DIARRHŒA, VOMITING, AND GIDDINESS.

CONSTIPATION may be described as inadequate discharge of the contents of the lower bowel; a definition which assumes, of course, that there is material in the lower bowel which is improperly retained. This is a fact which seems to require emphasizing, for the reason that the term constipation is often made to include infrequent defæcation in people with whom such infrequency is habitual and normal. It is well to remember that the amount of fæces represents the excess of material consumed over what it is possible for the economy to utilize, and that consequently, if people took no more food than was necessary to their continued existence, the amount of fæces would be practically nil. There are persons—not very forceful persons perhaps, but still perfectly healthy persons—who are very spare eaters, and who are, in addition, very careful eaters, in the sense that their food is thoroughly masticated, whose bowels do not act more than once a week. If we were to gauge the matter only by the standard of the practice of the

vast majority, this would seem absurdly and even dangerously inadequate, and yet the infrequency of the discharge in such cases, as being in consonance with the small amount of intake, must be regarded as natural to the physiological working of the individual, and, as such, not lightly to be interfered with. These people are, however, not ordinary people, and though it is wise to remember not only their existence, but also the physiological lesson of which they present living examples, it would be foolish to accept them as a standard by which to measure the practice of the majority.

The ordinary individual does not regard his diet from the standpoint of mere existence; he likes a balance on the right side, and is consequently in the habit of eating more, both in quality and quantity, than his system can possibly make use of. The excess in quality supplies him with a stimulant which he enjoys, which, indeed, he may even find necessary to the accomplishment of his daily work; the excess in quantity is a mere accident, as it were, a concomitant of the excess in quality, which he takes because it is part and parcel of the things he likes. This excess in quantity consists of what has been called ballast—material, that is, which he cannot digest, because it is indigestible by nature, material such as vegetable fibre and other constituents of food over which the digestive ferments exercise no dissolving influence. It is of the excess in quantity thus constituted that the fæces are for the most par

composed. Some of the excess in quality—a portion that is, of the material which is by nature digestible—also enters into their composition, especially when that excess is very conspicuous; but the discharged matter, as a rule, consists of material which has escaped digestion, not because the digestive organs are at fault, but because the material itself is insusceptible of solution and conversion into chyle. It is the inadequate discharge of this material which constitutes the condition which we are now considering.

It will be convenient to spend a moment in tracing the course of the excess in quality, and to inquire what becomes of the soluble material which is consumed, even though it is not wanted and cannot be utilized. Some of it doubtless becomes entangled in the indigestible residue, and under favourable conditions is harmlessly discharged. The greater portion, however, is metabolized and ultimately finds its way into the blood. Nature's processes being essentially thrifty, the excess is not immediately thrown away; it is stored for use on a rainy day, as it were, and is deposited as adipose tissue in various parts of the body. There is reason to believe that the process of this manufacture of fat, at any rate after a certain quantity has been deposited, is attended by by-products which exercise a very deleterious influence on the economy, and give rise to gouty, rheumatic, and kindred manifestations. The bearing of this upon the subject of constipation is this: that not only the original excess itself, but

also the by-products, have infinitely less chance of escape if the fæces are unduly retained.

Constipation may be either occasional or habitual. The former is seldom important, except in so far as it tends to lead to the latter, and this it does more often on account of its injudicious treatment than for any reason inherent in the condition itself. From the fact that there are so many remedies for it on the market, which are always given an extended trial before recourse is had to medical advice, occasional constipation is a matter about which a doctor is not often consulted. He may, however, be consulted about conditions which are directly due to a loaded rectum, though the cause is unsuspected by the patient. Diarrhœa is one of these, hæmorrhoids is another; but perhaps the most common are undefined digestive disturbances. It is also well to remember that a loaded rectum may be the determining cause of an asthmatic attack, a hysterical fit, an epileptic seizure, or of some even more obscure reflex manifestation, and that the nervous instability which these things denote will remain obdurate to treatment unless the simple, but easily overlooked, cause be removed.

Three remedies stand pre-eminent in the treatment of occasional constipation of this sort, and with regard to them, it is well to state at once, that their use in habitual constipation is as futile and injurious as their employment in occasional constipation is desirable and successful. The first is castor

oil, the second calomel, and the third a soap-and-water enema. Castor oil is a simple aperient, which generally acts without griping and may safely be given to people of all ages. The great drawback to its use is its nauseous taste, to overcome which various so-called tasteless oils have been placed on the market. With regard to these, it must be remembered that, to be efficacious, very much larger doses are necessary than in the case of the ordinary oil, and that none of them is quite tasteless. In order to avoid the taste, in so far as it is possible to do so, the dose of the ordinary oil should be given in milk, with which the rim of the glass has previously been wetted. If in the drinking care is exercised not to allow the oil to come into contact with the teeth—if, that is to say, the dose is 'tossed off'—the unpleasant taste is slight and transitory. Ringer says that a mixture consisting of castor oil, ½ ounce; fresh mucilage of acacia, 3 drachms; distilled water, 5 drachms; with, say, 3 drops of oil of peppermint, has very little taste.

Calomel is rightly considered the best purgative we possess, mainly because, in addition to being a purgative, it is an intestinal antiseptic of the highest value. The mistake which is commonly made in connection with it is that of giving it in large doses—*i.e.*, 2–5 grains. It effects its purpose much more satisfactorily if given in quite small doses, say ⅛ or ¼ grain, repeated every four hours until the bowels act. In this way it remains much longer in the

intestinal canal, and its antiseptic properties have therefore an opportunity of exercising their beneficent effects. The importance of these properties in the treatment of occasional constipation does not seem to be realized; people appear to imagine that purgation is of itself an antiseptic measure. Such it may be, but very often it is the reverse. Fæces which remain a long time in contact with the colon become quiescent, but as soon as they are disturbed by a purgative their toxins are set free, and unless the purgative contains the means of counteracting the effect of these toxins, it may do a great deal of harm. Calomel being the most reliable of all intestinal antiseptics, and a hepatic stimulant to boot, it is infinitely the best agent for occasional purgation. As a rule, it is advisable to follow an evening dose of calomel with a morning dose of aperient water.

Where it is desired to wash out the lower bowel without unduly stimulating the small intestine, or where the object is to hasten the action of a purgative given by the mouth, a soap-and-water enema is an excellent measure. For reasons just referred to, however, it is always well to add an antiseptic to the enema, and one of the best for this purpose is oil of eucalyptus, 4 or 5 drops of which should be well agitated with the soap and water before administration.

There is one practical point in the giving of an enema to which I should like to direct attention. Everyone knows that the fluid should be about

100° F., and everyone is aware that the success of the operation depends upon its being performed very slowly; but very few seem to realize either that the nozzle of the ordinary syringe is about the worst that could have been devised for its purpose, or that a very efficient substitute is very readily obtainable. The ordinary nozzle is too short, so that, in order to prevent the regurgitation of fluid, the disc which separates the nozzle from the tube has to be firmly pressed against the anus, a process which may give rise to considerable pain. This nozzle should, therefore, be removed, and an ordinary No. 12 gum-elastic male catheter be put in its place. The bone rim at the end of the catheter is almost an exact fit for the rubber of the syringe, and will retain its place without wire or cord. The catheter thus attached, when warmed and oiled, makes an admirable nozzle. It is introduced without pain, it reaches well up to the sigmoid flexure, and, if the patient's pelvis is elevated, as it should be, the fluid shows no tendency to regurgitate.

So much, then, for occasional constipation. We now pass to the consideration of the far more important subject of habitual constipation. Of this condition I would like to affirm at the outset that it is in the vast majority of people a malady which is eminently and easily curable, provided that it has not been long enough in existence to cause gross alteration in the anatomical relations of the parts, and the persistence of this alteration by the forma-

tion of adhesions, kinks, and bands. It is not, as a rule, until middle age is reached that chronic constipation becomes incurable by medicinal means. And, although it is one of the commonest and most curable of maladies, it is, unfortunately, true that it is the one that is least often cured; that it is allowed to remain one of the chief scourges of our present civilization, vying even with alcohol and syphilis in the multiplicity of its consequences and their magnitude. That it can be made to rank with the two latter is due to the fact that, like them, it supplies a toxin to the blood, which so befouls all the tissues as to render them suitable breeding-grounds for all kinds of microbes. The poison wears down the normal defences and allows the enemies to enter, to flourish, and abundantly to multiply.

Why it is that civilized man should be a constipated animal is a question that requires answering. And the answer is not, in truth, very far to seek. It is this: Civilized man eats too much, thinks too much, and sits too much. Also, he uses a water-closet. Uncivilized man hunted his food, and thus justified its consumption. He frequently fasted, either actually or relatively. The hunting kept his abdominal muscles in good order; and he slept, as a child sleeps, prone and fatigued. Civilization, not altogether devoid of advantages, is, physiologically, full of drawbacks. The control of the lower centres by the higher is essential to social life; it is the pivot round which the community revolves, and the dis-

gusting act of defæcation is very properly the first to be brought under the iron heel of propriety.

Very early in the life of the child the control centres are invoked, and defæcation, which, in strictest physiology, should occur after each meal—that is, at least thrice daily—is severely battened down until it reaches the level of a grudging diurnal concession to lower things. Then come social, scholastic, and other exigencies; the control is still further developed, until at length the control attains such complete mastery that the tail restrains the whole dog. That is the foundation; the superstructure erects itself.

This hypertrophic development of the control mechanism is the cause of all the trouble. In very early days, when the child is still on the level of the *pot de chambre*, he is discouraged from using it too frequently. Then he is promoted to the water-closet, to poise himself on the seat of which is all the more an acrobatic feat to him because his instinct tells him that to fall backwards into that seemingly bottomless pit would be the end of all things. Then come the school-days, and the necessity for regulating and still further controlling the excretory act. Boys are not encouraged to void their excreta, and girls are often positively discouraged. 'You must not give way to those feelings; you must learn to control them.' Alas! she proves all too apt a pupil. The control attains not only to mastery, but to despotism; and the healthy,

clean-skinned adolescent rapidly becomes the sour-smelling and sour-tempered adult.

If peradventure such a victim of custom and *les covenances* should at this point come in contact with a medical man who has not been impervious to the gospel according to Arbuthnot Lane, he may still find salvation. But even so, with reason and good advice to guide him, in comparison with the savage he finds himself handicapped. Many a time and oft he would like to, but cannot; letting 'I dare not' wait upon 'I would'; and even when he can, he is still surrounded by enemies. The chief of these is the modern water-closet. Savage man perforce adopts the crouching attitude, normal and necessary to complete emptying of the lower bowel, and he has only to turn round to assure himself that the bowel is indeed empty, that the tribute of the descending colon is really sufficient to lighten the burden of the day's work, and that he is, so to speak, a free man. The beneficent psychic effect produced by the sight of a generous stool cannot be overestimated. It turns a melancholy man into a joyous one; it makes the timid courageous and the lazy energetic. Now, the modern water-closet, for all its sanitary perfection *vis-à-vis* the community, is grossly defective *vis-à-vis* the individual, because it deprives him of the mental stimulus of the uplifting vision afforded by the result of his peristaltic labours. Nor is this its only crime. That its fathomless depth should deprive man of the satis-

faction of ocular appreciation is bad, but it is almost worse that its height from the ground should paralyze his abdominal muscles. These muscles are little enough exercised by sedentary man, but when seated on the ordinary everyday water-closet, he could not exercise them even if he would. A chair or a tall footstool may find him salvation by raising his knees, but if the basin itself were properly constructed, these adventitious and easily neglected aids would not be necessary. The Jennings, the Doultons, and the other practical sanitarians who have placed this generation under real obligations, should extend their energies to the standardization of a rational and physiological closet.

And what, in this connection, is meant by the term 'a sufficient evacuation'? The reply to this question given by a sergeant to a medical officer is worthy of record. 'What do you mean by a good rear?' The answer was prompt. 'Twice round the pan and pointed at both ends.' Such, no doubt, represents an occasionally attainable ideal to the man who pays his homage to Cloacina but once a day. But the man who knows, has an ideal at once more attainable and more workable: he solicits the goddess at least twice daily, and, careful though he be of the nature of his matutinal offering, it is to the vespertinal that he attaches the major importance. Then, freed from the press and distress which pursue him by day, he learns to lay his willing latria leisurely, leniently, and lavishly at her gracious feet.

On the question of the mechanism of normal defæcation, Professor Arthur Keith shed a flood of much-needed light in his Cavendish Lecture.[1] Therein he showed that the intestinal tract has several 'bundles' in many ways comparable to the bundles in the wall of the heart which originate the rhythmical contractions of that organ. The matter is best stated in Professor Keith's own words: 'In passing along the alimentary tract food is propelled through a series of zones or segments, each furnished with its own pacemaker and its own rhythmical contractions. In the heart we find two such zones, an auricular and a ventricular; in the normal heart the sino-auricular node is the master pacemaker. But a block or imperfection in conduction may occur between the two zones of the heart, with the result that "back-pressure"—a venous stasis—is produced. Now, seeing the similarity between the cardiac and alimentary motor mechanisms, we do not seem overpresumptuous if we suppose that irregularities may occur in the nodal and conducting system of the alimentary canal—irregularities of the same kind as are known to occur in the heart. When such irregularities or blocks do occur, we should expect to find them at the points where one rhythmical zone or area passes into the succeeding zone. That is exactly what we do find. We find a block where the œsophagus joins the stomach; we find another where the gastric zone ends and the

[1] *Medical Press and Circular*, July 28, 1915.

duodenal begins; we find it where the duodenal zone passes into the jejunal, and where the jejuno-iliac passes into the ileo-colic. We find a block may occur at any point of passage from a lower to a higher rhythm. At several of these junctional points sphincters are situated, and I do not deny that the mechanism of such sphincters may become disordered and cause alimentary stasis, but it will probably be found that a disturbance in the action of a sphincter is secondary to a disturbance in the excitability and action of the whole rhythmical zone or segment to which it belongs.

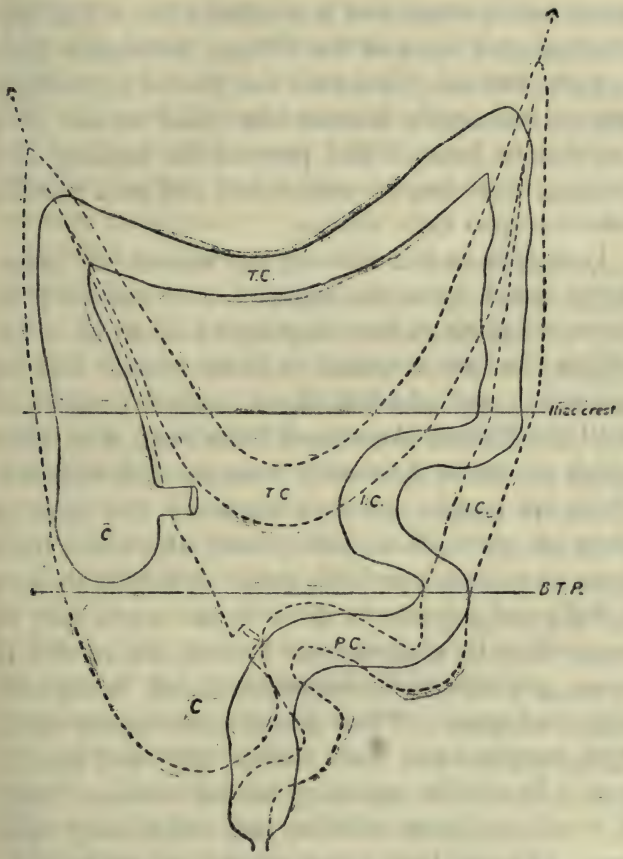
'Further, it is clear that to obtain an orderly propulsion of the food along the whole length of the alimentary canal those various rhythmical zones must be closely co-ordinated in their action, and there is a growing body of evidence, both experimental and clinical, that points to a very close co-ordination by means of a complicated system of reflexes. Disturbance in any one segment upsets the rhythm in all the segments. Bayliss and Starling observed that distension of the duodenum inhibited the action of the ileum; surgeons are familiar with the fact that a duodenal disturbance upsets the rhythm of the stomach. From the facts already mentioned it is easy to see that disturbance in the excitability and rhythm of the pacemaker of the cæcum will be reflected to the lower ileum. One can understand, on the hypothesis I place before you, how stasis in the great bowel may be followed

by ileal stasis, duodenal or gastric stasis, or how a disturbance of the conductivity or excitability of any of the rhythmical zone may ultimately give rise to stasis in all.'

The pathology of the physiological position thus expounded is supplied by Sir William Arbuthnot Lane in his book on 'Chronic Intestinal Stasis,'[1] a work which should be carefully studied by anyone who desires to have clear ideas on this all-important question. Briefly stated, the sequence of events is as follows: The erect posture of man, which tends to displace the abdominal viscera downwards and backwards into the true pelvis, in perfectly normal conditions is counterbalanced or compensated by the prone position during sleep, which tends to return these same viscera upwards and forwards, away from the true pelvis. Thus, the drainage, which is impeded during the day, becomes free and active during the night. If the counterbalance or compensation should fail from any cause, such as a faulty position during repose, changes occur. These changes, originally designed for the purpose of maintaining the viscera in their places, ultimately reach such a point of development as to defeat their own ends. By the kinking of the tube and the consequent narrowing of its lumen, what was intended as a support becomes an obstruction, much as a lead pipe may be seen to kink over its narrow bracket when exposed to heat. The accompanying diagram,

[1] Adlard and Sons, 1915.

reproduced from Sir William Arbuthnot Lane's book, shows very clearly the end-results of the pro-



cess which he describes in detail. I say end-results advisedly, for it must be borne in mind that the complete monstrosity which the diagram represents

usually takes about forty years to develop. The physician is concerned with the matter at a very much earlier stage, and it is entirely due to the brilliant pioneer work of Sir William Arbuthnot Lane —work for which his own and future generations cannot sufficiently honour him—that we are in a position to forestall and prevent the banding and kinking which impose such untold and such protean miseries upon their victims.

Inasmuch as our ideas of the normal are necessarily based upon the majority, and inasmuch as intestinal stasis, in some degree, is a condition which afflicts the vast majority, it is no wonder that its symptoms and physical signs escaped recognition until Sir William Arbuthnot Lane came with clear vision to rescue humanity from its own cesspool. There are people, and they are many, and most of them are unconscious delinquents, who hoard their fæces as a miser hoards his gold. A certain amount is daily and laboriously given to the world, but, in comparison to what remains behind, the amount is mean, physiologically insufficient, and therapeutically ineffectual. When young, these people carry their avarice upon their earthy, oily, and pimply faces. In middle age they become anæmic, scant of breath, exiguous of shin, and abdominally opulent. Old age they never reach; or, reaching it, they afford examples of the slippered, petulant pantaloon whom Shakespeare has rendered classical. Methodical but persistent intestinal drainage has

now become a rule for him who has eyes to see, ears to hear, and a nose to smell withal. Intestinal stasis was not, it is true, invented by Arbuthnot Lane, for it was known to Galen and Celsus, but he rediscovered it, and his originality and fearlessness have imposed its cure as a necessary condition precedent to all other cures. The therapist who now neglects it, thus proclaims his own sad stasis in matters scientific.

It is but a slight exaggeration to declare that every chronic disease is a symptom of chronic constipation. It is no exaggeration whatever to say that chronic constipation is at least a contributory cause in all chronic disease. At the back of the microbe there is to be sought the cause of the microbe, and this cause in every case is the state of the soil which permits him to flourish. Such a state of soil is described as a chronic auto-intoxication, which is only another way of saying that the drainage system is defective. And when the drainage system is defective to the point of there being a cesspool under the floor of the gastric dining-room, the powers of resistance are so reduced that the microbe comes and takes possession with easy and stupefying assurance. There are many diseases about which long articles and even large volumes have been written —pyorrhœa alveolaris and rheumatoid arthritis, for example—and many dyscrasias—the gouty, the glandular, the acid, and the migrainous, to wit—which are no more than symptoms of chronic intes-

tinal stasis. The percolations from the cesspool have permeated the soil, and the whole carcase becomes inhabited by the fauna and flora of decomposition and disease. The particular members of these hostile groups which are destined to lead the invasion, and the particular points selected for their ultimate development, are decided by considerations which are at present beyond us.

This general result, the toxæmic, of chronic constipation is not sufficiently insisted upon. The symptoms usually cited are correct enough in their way, but they are too local and too topical, and therefore too singular. The earthy complexion, the cold extremities, the subfæcal odour of the axillæ, the emaciation, the general malaise, Lane's cystic breast, and the like, are very real manifestations of the poisoning, but it is to be remembered that the same poisoning forms the foundation upon which actual diseases are built. Such are rheumatoid and other forms of arthritis; exophthalmic and other forms of goitre; 'borderland' and other functional nervous manifestations; menstrual disturbances and various gynæcological conditions; and others too numerous to mention. The existence of a chronic disease should thus create a suspicion in our minds that its existence and continuance are rendered possible by insufficient intestinal drainage. The individual symptoms just referred to will always help in this direction; but even in connection with these it must be remembered that they must be

looked for; none are so salient but that they easily escape the superficial observer.

From the foregoing it follows that in treating chronic constipation we are treating not only a toxic blood state, but we are also treating many so-called diseases, and that many so-called diseases cannot be satisfactorily treated unless and until the constipation and the consequent blood state have been successfully dealt with. This does not mean that the said diseases do not require any additional form of treatment for the alleviation of the symptoms which form the complex of each. They do. But it does mean that unless the constipation and the toxæmia are removed, treatment directed to the more obvious manifestations will be attended by a very fleeting improvement. The textbook therapeutics of such diseases generally includes the phrase 'attend to the general health.' This should be extended so as to read 'attend to the general health and especially to the intestinal drainage.'

Thus, in the treatment of intestinal stasis there are two main indications. The first is to discover and remove the cause of the stasis; the second, to nullify the toxæmia. The first is a problem which in the present state of our knowledge is surrounded by very considerable difficulties. We do not know enough to enable us to act with certainty and precision. We know very little about Professor Keith's intestinal 'motors.' We know that they exist, but we do not know what actuates them; still less do we

know what throws them out of gear. We know how Lane's 'kinks' and the 'controlling appendix' act in producing intestinal stasis, but we do not know why they themselves are produced. The method of their mechanical production has been shown us, and shown us in a manner so lucid and convincing that the dullest may see and believe; but the predispositions which lead to this mechanism still lie hidden in a closely sealed book.

Nevertheless, we have some empirical knowledge of the action of drugs in the treatment of constipation, which, when applied with judgment, insight, and some accessories, enables us to do a great deal to fulfil the two main indications. The question of the second indication, the nullification of the toxæmia, is one to which but very scant courtesy was paid until it engaged the attention of the vaccinating bacteriologist. If this eager truth-seeker has done little else of value, he has at any rate taught us not only the real importance of, but the possibility of attaining to, something in the nature of relative intestinal cleanliness. That this may be assured by means less complicated than the preparing and inserting of vaccines, does not detract from the merit of the vaccinator. Of these means one of the best is the regular exhibition of paraffin oil. The oil is said to be a laxative, which no doubt it sometimes is, but its beneficial effects upon the whole organism can scarcely be due to its very moderate power in this direction. Exactly how it behaves is

not easy to say, but it probably prevents the large intestine from absorbing undesirable matters by blocking the mouths of the glands; and, by dissolving and carrying off toxins, both liquid and gaseous, it reinforces the natural defences against toxic invasion.

Paraffin oil should be as viscid as is consistent with the fluid form—that is to say, it should have a specific gravity as near 0·890 as possible. The pure oil is quite tasteless. There are, however, some people who object to its consistency; in these cases there is no objection to combining it with other substances, such as malt, so as to form a powder, or emulsifying it with acacia, which is done in some deservedly popular preparations. To combine it with active drugs such as iron or the iodides is a mistake. No good is gained, and the issue is obscured. In connection with paraffin there are two warnings which should be laid to heart. The first is that if it passes through the intestines so as to reach the outer world in a form still recognizable as paraffin oil, the fact must be taken as an indication either that the dose is excessive, or, what is more frequent, that the oil is insinuating its way past an obstruction which it is unable to move onwards. In the one case the dose must be decreased; in the other a purgative, such as calomel, is necessary. The second warning refers to the power as a solvent which the oil possesses, a power which necessitates caution in prescribing it together with other drugs.

One of these is thymol, which, from the fact that it is a very good intestinal antiseptic, might easily be prescribed to be taken in conjunction with the oil if this warning were not heeded. The symptoms of thymol-poisoning, thus induced by a very moderate dose, are very unpleasant and alarming. A warning of another kind in connection with paraffin is one which should always be given to a patient who is about to take it for the first time. It is that paraffin oil leaks through the anal aperture often in such quantities as to soil the linen and even the outer garments, without the victim being cognizant of its passage. Omission to issue this warning has been known to bring the patient back to the prescriber with a burning fire on her lips and a dressmaker's bill in her hand.

There are several drugs whose claim to act as intestinal disinfectants is generally admitted, and there are many more whose obscure but beneficial effect upon the organism generally is probably due to an underlying disinfectant power either in the intestines themselves or in the blood-stream. Of the latter, quinine may be taken as example. Of the former, thymol has already been mentioned. Thymol is an intestinal antiseptic of undoubted potency, which, if certain precautions are observed, may be given in much larger doses than those suggested by the Pharmacopœia ($\frac{1}{2}$ to 4 grains). Inasmuch as it is very soluble, not only in paraffin oil, but in castor oil, olive oil, and oil of turpentine, these oils

should not be given at the same time as the thymol. It is also very soluble in alcohol, ether, and chloroform, so that mixtures which contain these should be avoided. If these facts are borne in mind, thymol in powder, enclosed in a capsule, which may advantageously be keratinized, can safely be given in 10-grain doses, twice or even three times daily. Thus given, it acts not only as a disinfectant of the intestinal canal, but as a very powerful deodorant of the fæces. To do any real good it must be given over long periods of time, say a month or six weeks.

The salicylates, especially in the form of salol (salicylic ester of phenyl), quinine salicylate, and bismuth salicylate, have a considerable reputation with some physicians as efficient intestinal antiseptics. I cannot, however, share in the enthusiasm which is sometimes expressed for them. In my hands their results have been disappointing. The same may be said of beta-naphthol, of which many speak in high praise; it has never succeeded in convincing me of its efficacy. With its cousin-germane, benzo-naphthol, prepared by the action of benzoyl chloride on beta-naphthol, it is far otherwise. I regard this drug as second to none in its power of disinfecting the intestinal tract and the blood-stream. It may be given in doses of 10 to 15 grains three times daily as a tabloid (grs. v.), or in a cachet. Unlike thymol, no special caution is necessary in prescribing it; and unlike beta-naphthol itself, it

does not seem to have any tendency, when given over long periods, to derange the kidneys.

One of the best of the intestinal disinfectants is mercury, but as mercury in all its forms is something more than a disinfectant, its use is necessarily limited by its chief physiological effects; it is consequently outside the present category.

In the objection which is sometimes urged against chemical intestinal disinfectants it must be admitted that there is much force. The objection points out that an efficient bactericide will kill not only the enemy microbes, but those friendly ones upon whose beneficent activities Metchnikoff insisted with such curious results. This is a very pertinent criticism, which it would be more easy than it is to dismiss as mere theory, if the results of our present antiseptic therapy were always clinically satisfactory. In certain cases these chemical disinfectants succeed admirably, but in others they fail, and their failure reminds us that the real intestinal antiseptic is to be found in the intestine itself. If we could but evoke an increased activity of the natural defences, the necessity for such aids as thymol and benzonaphthol would disappear. Attempts are already being made in this direction by administering 'secretin' and other hormones. It is still too early to write with confidence on the measure of success which is to be expected from such endeavours, but the principle is undoubtedly sound. I have had some experience with a preparation known as

Secretogen (G. W. Carnrick), and the results have so far seemed to justify the hopes which led to its introduction. It appears to stimulate the gastro-intestinal tract to more vigorous function, and thus to lessen the toxæmia. It seems well worth a trial in cases where the poisoning has led to loss of appetite and digestive disturbance.

We pass now to the consideration of the measures at our disposal for overcoming the stasis itself. Amongst the most important of these is the ensuring of proper support for the abdominal viscera, by toning and if necessary re-educating the muscles which form the anterior abdominal wall. It is not necessary here to consider the matter further than by saying that massage and properly directed exercises are capable of doing a great deal of good in this direction. Mechanical supports are very useful adjuncts even to well-developed abdominal muscles, especially after middle age, but the supports should be conceived on sound anatomical principles and carefully executed so as really to fit the individual patient. A great many of the abdominal belts upon the market are worse than useless, inasmuch as, by constricting the area above the umbilicus, they encourage the viscera in that fatal descent into the pelvis which is so surely productive of kinks and bands. Many a good corsetière is capable of making a well-fitting abdominal support, the so-called straight-fronted stays being very serviceable to this end. Messrs. Walton and Curtis, of 8, Old Caven-

dish Street, make an excellent contrivance for this purpose, the original lines of which were, I believe, suggested by Sir Arbuthnot Lane himself.

In so far as our knowledge permits, we should base our application of purgatives upon ascertainable facts. It is, for example, desirable to find out which of Keith's intestinal motors is at fault, and if possible to stimulate that particular one without overstimulating and thus fatiguing the others. In all probability it is this fatigue of overstimulated motors to which we refer when we speak of a purgative—*e.g.*, castor oil—which leaves 'after-constipation.' It is too often assumed that the evil effects of stasis are due solely to absorption from the large intestine, an erroneous assumption which dictated the heroic lavage of the colon which is known as the Plombières treatment. I am very far from saying that such treatment is undesirable. I believe, on the contrary, that in cases where the stasis is really in the colon, it is capable of doing a great deal of good, especially as a measure preparatory to treatment at once more sustained and more gentle. That the stasis is often, perhaps most often, in the small intestine is obvious both from a study of Lane's kinks and the consideration of Keith's motors. In the bismuth meal and the radiograph we are now fortunately possessed of a certain means of diagnosis on this very important point, and where such means are available they should always be appealed to. The two things which have most retarded the

scientific study of chronic constipation are the universality of the ailment and the superficial ease with which it may temporarily be overcome.

We do not yet know enough about Keith's motors and the causes which disorder them to enable us to deal effectively with their derangement, but we do know that certain drugs affect certain areas by preference. Mercury, podophyllin, and euonymin, for example, exercise their influence mainly in the duodenum; the sulphates of sodium and magnesium are active primarily in the ileum; colocynth chiefly in the large intestine; and aloes almost exclusively in the rectum. Most of the other purgatives which we employ—for example, cascara, rhubarb, and jalap—affect more than one area, and a great many produce their results as stimulants of the whole gastro-intestinal tract, bringing all or most of the motors within their influence. It is a curious and senseless and wholly unscientific parrot-cry which invests nux vomica with any power as a purgative.

The search for a drug which will at once relieve constipation and abolish a tendency thereto is like the search for the elixir of life or the philosopher's stone. A little consideration will show that such a drug does not and cannot exist. For under what euphemism soever their real effect may be concealed, whether they be called aperients, laxatives, hydrogogues, purgatives, cathartics, cholagogues, or what not, every one of them is essentially an irritant poison with a selective action on the alimentary

tract or some part thereof, which, when taken habitually, provokes the production of antibodies which will ultimately more or less completely nullify its action. The discovery of cascara gave some encouragement to the futile search for an ideal drug, but anyone with any real experience of its properties must realize that its merit resides solely in the fact that it produces antibodies more slowly and less vigorously than most others. In the long-run the antibodies are duly evoked, and the dose of cascara must be increased. Until further investigation succeeds in throwing more light upon the whole question, we are thus reduced to handling such aperients as we possess, so that no one of them is employed to the point of producing its antibodies. This means that in the treatment of chronic constipation, in addition to paraffin oil and benzonaphthol, we must ring the changes on various laxative drugs. It is my own practice to give a list of seven, one for each day in the week, with strict injunctions to the patient that, vary them as he will, he is not to take any one for more than two days in succession. In otherwise healthy adults my list always includes cascara, one mercurial and one saline; in children, aloin; in old people, belladonna. A very good pill which figures in most of my lists is one of whose composition I am ignorant—Pil. Savonneuse (Boissy).

In the matter of salines, it is to be remembered that these are less irritant than most other laxatives,

and are much less likely to evoke the neutralizing anti-bodies. They act by attracting fluid into the intestine, and thus aid in flushing out the back-waters. Salines have thus many advantages over most other laxatives. The disappearance from the market of the Austrian and German natural aperient waters at first caused some difficulty. British firms have now, however, filled the gap by the introduction of suitable substitutes. I can speak well of Tonalka and of Apwa.

[In combating the deeply rooted prejudice against the habitual taking of laxatives, begotten of the excesses of our forefathers, the profession of to-day has a long and stubborn furrow to plough. Nothing is more common than for patients to object to any treatment suggested for chronic constipation on the grounds that they do not want to get into the habit of taking drugs. That is academically a praise-worthy attitude, the reply to which is that it is much better to take drugs than to be a walking cess-pool. The most difficult people to persuade are those who are satisfied with a small but perfectly regular daily motion. They will not believe that there is a residue, the absorption of whose toxins is the cause of the symptoms arising in diverse places, most of them remote from the abdomen. Until the profession succeeds in overcoming these prejudices and obstinacies, the most potent cause of what may be called out-patient maladies will continue to flourish with destructive security.

DIARRHŒA.—The first thing we have to remember about this condition is that, except in children, it cannot be regarded as a disease *per se*. In the latter it must always be regarded as much more than merely symptomatic, and as in them the condition is liable to assume an aspect of the highest importance and the utmost gravity, which is adequately dealt with in most textbooks, I do not propose to refer to it, beyond calling attention to a very masterly presentation of the subject to be found in Dr. Edmund Cautley's work on the "Diseases of Infants and Children."[1] The same author contributed a paper entitled "Summer Diarrhœa" to the *Medical Press and Circular*, which appeared on July 14, 1915, and is one of the most practical and helpful papers I remember to have read upon a very common and little understood malady. In view of the latter-day campaign for the preservation of infant and child life, it behoves the medical man to be thoroughly well equipped in the treatment of such diseases as show a high infant mortality. Summer diarrhœa is one of these. It requires very prompt and thoroughly instructed treatment, with the details of which the young practitioner should make himself quite familiar. This is the more necessary because he will frequently encounter very decided opposition from ignorant mothers and nurses who are quite unable to appreciate the necessity for the measures which must be insisted on.

[1] London, Shaw and Sons, Fetter Lane.

Diarrhœa in the adult, except where it means typhoid, dysentery, or some equally obvious condition, spells intestinal irritation. And in connection with this irritation we have to remember that what will irritate one person will fail to produce any effect upon another —or, for that matter, upon the same person under different conditions. The diarrhœa of the neurotic or neurasthenic person, for example, is an instance of the result of very minute stimuli upon a sensitive organism, and the proper way of treating it is not by attempts to remove the irritation, but by lessening the reactive power of the individual. There are a good many people who go about in mortal dread of being 'taken short' at inconvenient times and places—*e.g.*, in church, or on a long railway journey; and their nervousness under such conditions supplies the stimulus necessary for the production of the very condition which they dread. In such cases the exhibition of the bromides and other measures, physical and moral, calculated to strengthen the nervous equilibrium, constitutes the proper line of treatment. Astringents, especially opiates, should be avoided.

Diarrhœa may be salutary. This is worth remembering, especially in view of the fact that the condition is, to say the least of it, very inconvenient, and that the subjects of it are consequently very insistent in demanding relief. It is salutary when, as in alcoholism and kidney disease, the bowels are called upon to do more of the excretory work of the body than legiti-

mately falls to their share. When such a state of matters is to be suspected the right treatment consists in calling upon the other emunctories, especially the skin, to undertake their share of the burden, and by suitable diet to lessen as much as possible the manufacture of the offending material. A hot bath—hot enough, that is, to produce free diaphoresis—is an expedient which is too much neglected in the treatment of this condition. The warmth is very grateful to the patient, and the diaphoresis helps to relieve the work of the intestines. In this way the diarrhœa is checked, while the discharge of the offending material is not interfered with.

The commonest cause of diarrhœa, however, is the presence of irritating matter in the intestinal canal itself. Here the condition is not salutary, because it is as a rule futile. The irritant, whatever may be its nature, produces increased peristalsis below the point at which it is situated, so that the resulting diarrhœa tends to exhaust the patient, without in any way contributing to the removal of the cause. In such cases, which constitute the vast majority of those with which we have to deal, an efficient evacuant (say ½ ounce to 1 ounce of castor oil) which will act on the intestine from above the site of the irritant should be given at once. It seems needful to dwell upon the necessity for this, because I find that diarrhœa is so often treated by astringents without any preliminary evacuant—a procedure which is as unscientific as it is useless. Slight looseness of the

bowels may, of course, occasionally be successfully so treated; but we must remember that household remedies have invariably been tried before a case of diarrhœa reaches a doctor, and that household remedies consist of astringents. To neglect the evacuant, therefore, is to do wrong both scientifically and tactically; the only effects of so doing are to prolong the sufferings of the patient and to bring discredit upon the practitioner.

When the bowels have been cleared of the offending matter, astringents may be given with every confidence. In these it is generally wise to include opium, always supposing, of course, that the kidneys are in a healthy condition. Opium not only assists the action of the astringents, but it affords rest to the bowel and soothes the irritated nervous system. The combination which I have found most efficacious for this purpose is as follows:

℞. Tr. opii ... ... ℥x.
Sp. ammon. co. ... ... ℥xxx.
Ess. menth. pip. ... ... ℥xx.
Tr. catechu ... ... ʒi.
Aquam ... ... ad ʒi.

M. Sig.: Every four hours.

Preceded by a dose of castor oil and a hot bath, I have never known this mixture to fail in affording relief in diarrhœa when the condition was caused by a simple as opposed to a specific irritant. Diet is, of course, an important matter in guiding the malady to a satisfactory conclusion, but the dietetic

management consists more in the application of rational general principles than in the prescription of any particular régime. It is advisable to remind the patient that food, when well masticated and insalivated, leaves very little for the irritated intestines to do, and that the more thorough these processes are the more quickly will the irritation subside. Milk is probably the best food for those with whom it agrees. For those who cannot take milk, fish, poultry, and meat, as less liable to give rise to fermentation, are better than farinaceous foods.

Diarrhœa is apt to appear as an early event in two complaints, of whose existence it is occasionally necessary to remind ourselves—namely, Graves' disease and Addison's disease. The latter is not very common, perhaps, but when it does occur it is well for all parties that it should be recognised early. To this end it should always present itself as a possible explanation of what may appear to be an ordinary attack of diarrhœa. The same is true of Graves' disease. This is far more common than Addison's disease, and as its only other symptom may be tachycardia, we should be on our guard against dismissing as a little 'intestinal irritation' a case which may ultimately progress to thyroid enlargement and exophthalmos. Tannigen (di-acetyl-tannin) is a good symptomatic astringent. It should be given in a cachet (10 grains) three times a day.

Fissure of the anus and stricture of the rectum often lead to diarrhœa by causing accumulation of

fæces. Persistent diarrhœa in a person over forty should always lead to a careful examination of the rectum, as malignant disease is, under such circumstances, probably the commonest of all causes.

A group of symptoms variously designated, but now usually recognised under the title of *mucous colitis*, may be associated either with constipation or diarrhœa. As a rule, the one alternates with the other, but it is generally the diarrhœa which brings the patient under observation. There is always mucus in the stools, sometimes in very large quantities, and it is occasionally sufficiently organized to resemble shreds of membrane (muco-membranous colitis). Not infrequently blood is also present. The diarrhœa, which is accompanied by a considerable degree of pain, is unaffected by the ordinary remedies, and leads rapidly to emaciation and the development of symptoms of 'nervousness.' So much is this the case that mucous colitis has been considered a morbid entity, and has been described as a neurosis. Against this facile view of the matter and the mistaken therapy which is its logical outcome, it seems necessary to enter a warning. Lockhart Mummery has shown[1] that mucous colitis is merely a symptom; that it may be due to a great variety of causes, amongst which may be mentioned malignant disease, ulcers, adhesions, retroflexed uterus, and the apparently ubiquitous and inevitable appendicitis. The symptom may, however, be due to a simple catarrhal

[1] 'The Causes of Colitis' (*Lancet*, June 15, 1907).

inflammation of the large intestine, more especially of the region of the sigmoid flexure (resembling the catarrhal inflammation so commonly observed in the upper air-passages), which has been induced by the chronic irritation of masses of undischarged fæcal matter. When due to such a condition, the treatment is both simple and efficacious, and, like that of bronchial catarrhs, it consists in the application first of sedatives and subsequently of astringents. The best way of applying sedation is to irrigate the bowel with the best lucca oil. Inferior oils are useless, because they act as irritants instead of sedatives. The oil, previously warmed, should be introduced very slowly by a douche (not by a syringe) with a catheter nozzle (see p. 101). The patient lies on his *right* side, with the hips well raised and all his muscles relaxed; the douche-can is placed at a moderate elevation (not more than 2 feet above the level of the anus), and the oil is allowed to flow gently in. The degree of inflammatory catarrh can to some extent be gauged by the length of time during which the patient is able to retain the pint of fluid thus introduced. At first he may wish to return it at once, but he must be encouraged to bear with it. As improvement sets in, the irritability of the mucosa lessens, and the oil is easily retained for several hours at a time. When tolerance is established to the point of permitting the retention of the oil for ten hours, which generally occurs in the course of a week, an astringent fluid, such as argyrol (1 per cent.) or

potassium permanganate (1 in 2,000) may be substituted, after which complete subsidence of the symptoms quickly follows. It is needless to say that during this treatment the patient should be confined to bed; nor should it be necessary to emphasize the necessity for the utmost patience and skill in securing that the injected fluid shall irrigate the whole length of the large intestine. If this line of treatment does not succeed in affording prompt and permanent relief, it is practically certain that the colitis is due to some cause more serious than a simple inflammatory catarrh of the mucosa. An examination by means of the sigmoidoscope should therefore be advised.

VOMITING, like diarrhœa, usually appears as a symptom of some definite underlying morbid condition; but, like diarrhœa, it also occurs as an apparently separate clinical entity, for which no cause can be discovered beyond an undue irritability either of the stomach itself or of the vomiting centre in the brain. It is a common symptom of gastric disorders, and in searching for a cause, one's thoughts naturally turn primarily towards the stomach. It should always be remembered, however, that there are two serious conditions with which it is often associated, and whose existence is liable to be overlooked if we make the mistake of considering too exclusively the gastric origin of the symptom: one is intracranial disease, the other is renal disease. In both these conditions the sickness may easily be the only obvious symptom, and, unless we make it a rule always to

examine the urine and the fundus oculi in every case of vomiting for which no obvious explanation is forthcoming, we lay ourselves open to the risk of very grave errors of diagnosis.

Cerebral vomiting is generally accompanied by headache and optic neuritis, and careful search for physical signs in the nervous system will nearly always bring to light some other facts which point to its true origin. It is a common and very disastrous mistake to label as hysterical, sickness which is due to some serious intracranial lesion. Vomiting does, of course, occur in hysteria, but, then, hysterical or 'functional' manifestations are of very frequent occurrence in almost all intracranial conditions, so that it is never safe to make a diagnosis of hysteria until structural disease can be positively excluded. In children vomiting is commonly an early event in meningitis.

Vomiting may be the first event to call attention to the existence of *kidney disease*, and negligence to examine the urine may thus be fraught with very serious consequences; for if we do not realize that the sickness is of renal origin, not only shall we fail to treat the disease by appropriate means, but in our endeavours to stop the vomiting we may have recourse to measures, such as the giving of morphia which may actually militate against recovery. Moreover, it is well to remember that absence of albumin does not necessarily exclude the possibility of disease of the kidneys. In nephritis, of the chronic inter-

stitial type especially, albumin may be absent, so that evidences of renal trouble must be sought for by examination of the heart and arterial system—the former for hypertrophy of the left ventricle, the latter for arterio-sclerosis.

Other common causes of vomiting are *hernia*, *pregnancy*, *whooping-cough*, and *phthisis*. It is, of course, of the utmost importance to bear the existence of these factors in mind, so that they may be examined for. Our mistakes are less often due to ignorance than to the forgetfulness or negligence begotten of hurry. A form of vomiting which is characteristic enough to lead one immediately to suspect its true cause is that which heralds the invasion of an *acute specific disease*. Here the sickness is not accompanied either by nausea or retching, but the contents of the stomach are suddenly, completely, and unexpectedly expelled without pain or discomfort. Except where an emetic has been given, this kind of sickness is very suggestive of the onset of an acute fever of some sort.

The vomiting which occurs in association with the condition variously called *sick headache* and bilious headache is liable to be very troublesome, more especially if the true nature of the underlying condition is not recognised and treated. This matter is fully discussed in the next chapter, but I may say here that the name bilious, as applied to these attacks, is particularly unfortunate, for the reason that it suggests treatment by mercurial and other

cholagogue cathartics, than which, as a rule, nothing can be more harmful. These attacks are in a very large number of cases due to ocular refractive errors and other peripheral irritants; and unless the patient is properly fitted with correcting glasses, or the irritation otherwise subdued, drugs such as phenacetin, though they may give relief at the time, contribute nothing whatever to the prevention and ultimate cessation of the attacks.

The influence of refractive errors in the causation of vomiting, apart altogether from headache, does not seem to be sufficiently appreciated. It is by no means uncommon for a person whose error—say a low degree of astigmatism—has been corrected, and, before he has accustomed himself to the use of the glasses, to complain that the glasses cause nausea, and even attacks of vomiting. These attacks will often lead to the discontinuance of the glasses. This is a very foolish procedure, into the result of which it is impossible here to enter. What it seems necessary to insist upon is that nausea, vomiting, and a host of other symptoms, often rightly attributed to neurasthenia, but more often wrongly relegated to hysteria, are very frequently due to uncorrected errors of refraction, and that, unless these errors are corrected, the symptoms will persist. Eyestrain[1] is responsible for an enormous amount of ill-defined nervous troubles of modern life, and the practice of some ophthalmologists of dismissing low degrees of error as unimportant is responsible

[1] See next chapter.

for much of the futility in the treatment of these troubles.

Sea-sickness is in many cases, at any rate, traceable to the ocular apparatus. The landsman is unable, because he is unaccustomed, to accommodate his visual machinery to the rapid and sudden changes of movement caused by a rough or choppy sea, and his efforts to bring about this accommodation give rise to nausea and vomiting. That, in many cases, this is the sole factor at work is evident from the fact that the simple expedient of wearing a patch over one eye when on board has been sufficient in so many cases to prevent sea-sickness. No efforts are made to reconcile the workings of the two eyes; strain is prevented, and sickness remains absent. It is not, of course, suggested that sea-sickness is always due to this cause, but it very often is, and the above-mentioned expedient is consequently always worth a trial. In the majority of cases, no doubt, other factors are also at work, and in most of them we must suppose that there is an undue irritability of the nervous system, which causes a too ready response to slight stimuli.

In patients of this type it is generally quite easy to prevent sea-sickness if we can commence treatment a week or so before the voyage begins. The excitability of the general nervous system is reduced to normal by giving bromide of ammonium in 10-grain doses three times a day for at least three days. The primæ viæ are suitably cleared, and, with a view of exercising a special effect upon the stomach, some liq. bismuth.

ammon. cit. (2 drachms) with tr. nucis vom. (3 minims) is added to each dose of the bromide mixture.

The medicine should not be taken on board—not only because it is then too late, but also because there is another drug which has proved in my experience unfailing, even when given without any preliminary preparation by bromides—namely, chloretone. A good way of giving chloretone is to prescribe it in 5 to 10 grain cachets—one cachet to be taken during the train journey down to the boat, another as soon as the patient is settled on board, and a third, if necessary, at any time during the voyage. If the patient is directed to preserve the dorsal posture when on board, the third cachet is very seldom necessary. I have now prescribed chloretone in a great number of cases, and where the way has been prepared for it by the bromide mixture, I have not known it fail, and even in the absence of any such preparation, I have learned to have the utmost confidence in it. It may be given in 10-grain doses if sickness threatens. It will often stop an attack which is actually in progress.

It is not infrequently necessary to treat symptomatic vomiting, either pending the removal of the cause or when the cause is unfortunately not removable. A great many expedients have been suggested for this purpose, some of which are often useful, but which seem as often to be without effect. The application of a blister or a mustard-plaster to the epigastrium is often very successful, but no less often

useless. Occasionally successful, also, is the application of an ice-bag to the same region, or a poultice, or gentle massage. These are all well worth trying, for they are simple enough, and if they do not succeed, they cannot do any harm.

Of drugs, the simplest is undoubtedly lime-water, and Burney Yeo urges strongly that it should be given a trial more frequently than is now the case. A tablespoonful, he says, should be administered hourly for several hours before recourse is had to other means. He recommends, further, the addition of one drop of creosote well shaken up with each dose, in case the lime-water alone is unsuccessful. Champagne is perhaps one of the most popular of all remedies for this condition, and it has the merit of being one of the most efficacious. It should be given, preferably iced, in quite small doses, say 1 to 2 drachms, repeated at intervals of ten minutes or a quarter of an hour, until vomiting ceases. I have known many cases in which this succeeded when all other measures had failed.

Vin. ipecac., liq. arsenicalis and hydrocyanic acid have all enjoyed some reputation in the treatment of vomiting, and for this purpose they are all employed in minute doses—*i.e.*, not more than 2 minims. Ringer speaks highly of vin. ipecac., but not everyone is able to share his enthusiasm. Fowler's solution is admittedly useful in the morning vomiting of drunkards, but I have found it beneficial in symptomatic vomiting arising from other causes. Hydrocyanic acid is usually very reliable, but it is not wise

to restrict its use to the small doses above suggested. It may be necessary to prescribe it in 3 or even 5 minim doses to produce the required effect, but these must obviously not be frequently repeated. A combination of all three drugs in 1-drop doses, repeated at intervals of ten minutes or a quarter of an hour, is an expedient to which I have occasionally resorted with success.

Bismuth is a useful drug in vomiting, and, in combination with oxalate of cerium, it is, when the stomach will retain anything, probably the most reliable of all. It is best given in cachets:

℞. Bismuth subnit. ... ... gr. xx.
Cerii oxalat. ... ... gr. v.
M. Ft. pulv. in cachet i.

But the cachet must be well moistened before any attempt is made to swallow it. Finally, morphia by hypodermic injection, though it often causes vomiting, will not infrequently stop it. When given for this purpose the dose should be relatively large—that is, about ½ grain. Small single doses are much more liable to cause gastric disturbance than large ones.

In association with vomiting it seems appropriate to consider briefly the allied condition of **GIDDINESS.**[1] Although this condition is common in cerebellar disease, especially cerebellar tumours, in disseminate sclerosis, and is not altogether uncommon in tabes, it

[1] See 'The Border-Land of Epilepsy,' by Sir William Gowers (J. and A. Churchill, 1907).

should not be regarded as necessarily indicating the presence of some grave cerebro-spinal mischief. It is frequently due to ocular troubles; paralysis of an ocular muscle will give rise to it, and errors of refraction are among the commonest causes. Abnormalities in or about the ears very readily occasion the symptom, hardened cerumen being among the most frequent.

Ménière's disease, or aural vertigo, which is due to an affection of the semicircular canals, may cause paroxysmal attacks of giddiness, accompanied by vomiting, and is thus liable to be mistaken for migraine (*q.v.*, p. 172). Ménière's disease is, however, almost always associated with some degree of deafness, which is seldom the case in migraine; moreover, in aural vertigo the giddiness is very pronounced; so much so that the patient not infrequently falls. For the treatment of aural vertigo, bromide of potassium and belladonna, persevered with over long periods, often do a great deal of good. During the attacks both quinine and the salicylates are highly spoken of. The former should be given in large doses (10 to 15 grains or more); the latter, in the form of aspirin (10 to 15 grains), is probably equally efficacious and less liable to produce unpleasant by-effects. Sometimes hydrobromic acid acts better than any of the bromide salts. This drug is much the most reliable remedy we have in those persistent noises in the head which occasion annoyance and alarm to those who suffer from them.

Giddiness is said to be sometimes due to causes arising in the digestive apparatus. There is very considerable doubt as to the stomach ever being directly responsible for the symptom. The real cause of giddiness in most cases, apart from those which have just been noticed, is some disturbance in the vaso-motor mechanism. We know that toxins originating in the digestive tract are very powerful disturbers of this mechanism, and it is exceedingly likely that digestive disturbances may cause giddiness in this way. The disturbance as a rule takes the form of vaso-constriction, but there seems no reason why the opposite condition of vaso-dilatation should not also bring about the same result. The circulatory apparatus in the brain is of so delicate a nature that any alteration of the calibre of the conducting vessels is liable to cause symptoms. The giddiness of elderly people usually means atheroma; that of the gouty, either high arterial tension or its next stage, arterio-sclerosis; even the giddiness of epileptics is probably circulatory in origin, and that which is so common at the climacteric is certainly so.

Attacks of giddiness, therefore, should never be lightly regarded. They may be due to transitory causes, but they may, on the other hand, indicate some very serious condition. They should always lead to a careful examination of the nervous system, including the special senses, and, failing the discovery of a cause therein, the question of the state of the heart and bloodvessels should engage the most

anxious attention. It is not too much to say that the vast majority of cases of 'simple' giddiness are due to vascular changes, and that among these high blood-pressure occupies the first place. For a consideration of this question and its treatment, the reader is referred to the chapter on Goutiness.

ADDITIONAL FORMULÆ.

For Colic (Ludlow).

℞. Chlorof. ... ... ℥ii.
Morph. acetat. ... ... gr. iii.
Olei anisi ... ... ♏xvi.
Ol. menth. pip. ... ... ♏xvi.
Syr. acacia ... ... ℥ss.
Aq. camph. ... ... ad ℥iv.
M. ℥ii.-℥ss. for a dose.

For Colic with Constipation (Paris).

℞. Ol. cajuput ... ... ♏iv.
Sacch. alb. ... ... gr. x.
Rub together, and add:
Tr. jalap. ... ... ℥i.
Decoc. aloes co. ... ... ad ℥iss.
M. Ft. haust.

For Colic of Infants (Widerhofer).

℞. Tr. cascarillæ ... ... ♏x.
Tr. krameriæ ... ... ♏x.
Ol. anthemidis ... ... ♏i-ii.
Syr. simplicis ... ... ℥iiss.
Aquam ... ... ad ℥ii.
M. Sig.: One teaspoonful every two hours.

Constipation in very Young Infants (Monti).

Mannite ...	...	...	...	...	gr. cl.
Hot water	...	...	...	...	℥iss.

M. A dessertspoonful every hour until it acts.

Sir James Paget's Cure for Constipation.

1 lb. French plums, in enough water to cover them. Stew for three hours, simmering gently, and then remove stones.

1 oz. of ground ginger (good weight).

1½ oz. powdered senna.

1 lb. Demerara sugar.

Mix the whole together well in a pudding basin.

Dose : A teaspoonful at bedtime.

Pills for Gouty Constipation.

℞.	Iridin ...	...	...	...	...	gr. xxiv.
	Aloes pulv.	...	...	...	...	gr. xviii.
	Ext. hyoscyam.		...	...	...	gr. vi.

M. et divide in pil. xii. Sig. : One at bedtime, followed by a saline in the morning.

For Diarrhœa in Infants, after an Aperient (Eustace Smith).

℞.	Saponis duri Hispanioli		...	...		gr. xvi.
	Cretæ prep.	...	...	...	...	gr. xx.
	Syr. flor. aurant.		...	...	...	℥ii.
	Aq. menth. sativ.		...	...	...	℥iii.
	Aquam fœniculi	...	...	...		ad ℥i.

M. Sig.: A teaspoonful every eight hours for a child between six and twelve months of age. Older children may take the same quantity every six hours.

(*b*) ℞.	Spts. ammon. aromat.			...	...	♏xx.
	Tr. rhei	...	...	...	...	♏xxiv.
	Tr. opii	...	...	...	...	♏iv.
	Spts. chlorof.	...	...	...	...	♏xxiv.
	Aquam carui	...	...	...	...	ad ℥i.

M. Sig. : One teaspoonful every eight hours for a child of six months old

Diarrhœa of Adults, after an Aperient (Hare).

(*a*) ℞. Tr. kino ... ... ℥i.
Tr. catechu ... ... ℥i.
Mist. cretæ ... ... ℥iii.
Aquam cinnamomi ... ... ad ℥vi.

M. Sig.: ℥ss. every three hours.

(*b*) ℞. Acid. sulph. aromat. ... ... ℥ss.
Ol. cajuput ... ... ♏xl.
Ext. hæmatoxyli ... ... ℥ii.
Spts. chlorof. ... ... ℥i.
Syr. zingiber. ... ... ad ℥iii.

M. Sig.: ℥i. in water every two or three hours.

CHAPTER IV.

RHEUMATISM, NEURALGIA, HEADACHE.

RHEUMATISM is a term which, if it ever had a precise meaning, has now, unfortunately, lost it. As applied to acute rheumatism or rheumatic fever, it bears, no doubt, a definite significance, but it is now generally admitted that the disease which is so described has no real relationship with the numerous other morbid conditions to which the terms 'rheumatism' or 'rheumatic' are commonly applied. These terms are made to comprise most of the arthropathies, both acute and chronic. The arthropathies have been very conveniently divided into the essential and the accidental; the former being those in which the joint affection is the predominant feature in the disease, such as gout, acute and subacute, rheumatic fever, morbus coxæ senilis and rheumatoid arthritis; the latter being those in which the joints are involved secondarily to some other affection, such as pulmonary osteo-arthritis, and the arthritis of gonorrhœal, scarlatinal, septic, syphilitic or neuropathic origin. These conditions are, of course, quite distinct from each other, and, as they all belong to the sphere which is properly

covered by the text-books, they need not concern us here. There remain for our consideration, then, chronic gout and chronic rheumatism. The former is dealt with in the next chapter; into the problems presented by the latter I now propose to enter.

In the existence of chronic rheumatism, properly so called, I may say at once that I do not believe. I do not believe, that is, that there is any chronic form of the condition which we call acute rheumatism, or rheumatic fever. Fagge says: 'Chronic rheumatism ought to mean a chronic arthritis of the same pathology as the acute outbreaks of rheumatic fever. Such a disease, we may affirm, does not exist.' With this opinion, though it is not shared by all, even by so great an authority as Osler, I am in entire accord. Certain chronic joint troubles, it is true, are liable to appear as sequelæ of rheumatic fever; but these same joint troubles appear equally often after true influenza, after sore-throats, and, in the predisposed, after local injury to joints, such as sprains. Moreover, these joint troubles, inasmuch as they affect, not the cartilage, synovia or bone, but merely the fibrous tissues surrounding the joint, have no real relationship to those which occur in acute rheumatism. The conditions which are admittedly closely related to true rheumatism, such as chorea, tonsillitis, and subcutaneous nodules, have, of course, no arthritic element, and are not in any sense of the term chronic; so that although their power of causing rheumatic endocarditis should never be lost

sight of, it is impossible to include them in such a term as 'chronic rheumatism.'

The fact is, chronic rheumatism has nothing whatever to do with true rheumatism, and it would be well if some authoritative name could be applied to the condition which is variously described as rheumatics, chronic rheumatism, muscular rheumatism, tendinous rheumatism, rheumatic myositis, myalgia, and neuralgic rheumatism; for the morbid state which is thus buried beneath misleading and confusing names has a very distinct and very definite existence, with its own pathology, symptomology, and therapeutics, so that the retention of the term 'rheumatism' in connection with it is not to be defended even on the ground of convenience. In the meantime, being to some extent bound by custom, I propose to use the expressive, illiterate, but highly convenient term 'rheumatics,' invented by and beloved of the laity, to designate the condition.

Rheumatics, then, may be described in the terms of Stockman,[1] who has done so much to introduce order into the chaos which previously existed on this subject, as a condition in which the essential pathological changes are confined to white fibrous tissue; in which, therefore, the manifestations appear chiefly in aponeurosis, fibrous septa, the sheaths of muscles and nerves, periosteum, and the fibrous structures surrounding the joints. 'The lesion,' he

[1] *British Medical Journal*, February 27, 1904.

says, 'consists in inflammation and hyperplasia of the connective tissue in patches, and the condition may be widely spread over the body or be confined to a certain area of it.'

When once the conception presented by this description is realized, the isolated and disconnected facts which have hitherto been associated with the condition at once fall, as it were, into their appropriate places. White fibrous tissue is found practically in all parts of the body, so that the rheumatics may appear anywhere; but inasmuch as there is a special distribution of this tissue in connection with joints, voluntary muscles, and nerves, it is not surprising to find that it is in these structures that the disease most often shows itself. It is thus evident that so-called chronic articular rheumatism, muscular rheumatism, or myalgia, especially in the form of lumbago, neuralgia, especially in the form of sciatica and brachialgia, are all one and the same disease, the only real difference between them being the anatomical situation of the fibrous tissue which is attacked by the inflammation and hyperplasia described by Stockman.

Where the fibrous tissues all over the body are more or less impartially attacked, the result is what is known as febricula, or feverish cold—a condition to which reference has already been made (Chapter I.) as a fruitful source of error in diagnosis; those who do not remember its existence almost invariably labelling it 'influenza.'

'Rheumatics,' then, includes arthritis, lumbago, torticollis, and other aponeurotic and muscular inflammations, wherever situated; sciatica, intercostal and other neuralgias; and, inasmuch as the pericardium, pleura, and dura mater are all richly supplied with white fibrous tissue, it will be proper to comprise in this category certain forms, at any rate, of cardialgia, pleurodynia, and rheumatic headache.

This inflammation of white fibrous tissue or 'fibrositis,' as Sir William Gowers has named it,[1] is said to be due to a variety of causes. It certainly seems to be determined by many conditions and influenced by many others, but the cause is probably always the same. This cause is connected with the gastro-intestinal tract, and is almost certainly produced by the absorption of toxins therefrom. The toxins are the result of defective metabolism, from the too free ingestion of meat foods and alcoholic drinks, or their inadequate elimination.

Such a state of matters does not constitute gout, but it constitutes a condition very nearly allied thereto, and we are generally quite safe in treating a person who is subject to fibrositis as if he were goutily inclined. And this we may do in spite of the fact that the manifestations are by no means confined to the old or middle-aged. The old are, perhaps, more prone to be attacked by chronic arthritic fibrositis, but myalgia is more common in

[1] 'Lumbago,' by Sir William Gowers (*British Medical Journal*, January 16, 1904).

young adults, and even children are occasionally affected.

Of determining causes, damp, cold, and atmospheric changes appear to be the most potent. It is difficult to trace the connection between the states of the weather and the incidence of fibrositis, but that there is a very intimate connection everyone who has ever suffered from the disorder will readily agree. Many a patient complains that he is a regular barometer, that he can be sure that a change is imminent, but none can foretell with any approach to accuracy what the nature of the change will be. Some will have an attack when the wind is going to the east, others when it is going to the west, and most will predict an increase in atmospheric humidity.

The question is an interesting one, about which, however, very little is at present known. These atmospheric influences, whatever they may be, are particularly liable to affect joints or muscles which have been the seat of injury or overwork. Thus, the rheumatics will always select by preference the fibrous tissue surrounding a joint which has been sprained, and the 'golf shoulder' or 'tennis elbow' will be found afflicting the particular joint which has borne the brunt of the season's work. The prevalence of lumbago is almost certainly susceptible of a similar explanation, in that the muscles and aponeuroses therein concerned are those which maintain the erect posture.

The application of sudden cold is a very powerful

determining cause. Sitting in a draught will unquestionably bring on an attack in a predisposed person. A common history is that of a sudden onset during the cold morning tub, and some bathing fatalities are probably due to this cause. But whatever may be the exciting or determining cause of a particular attack, the point to remember is that the essential condition precedent is the existence of a toxin in the blood, and that that toxin in the large majority of cases, if not in all, is of gastro-intestinal origin. This fact at once points to the two most important indications in the treatment of a fibrositis wherever it may appear, and these are the cleansing of the gastro-intestinal tract by a mercurial purge, and the careful regulation of the diet by the diminution of meat foods and alcoholic drinks. An additional measure of the utmost utility at the outset is an ordinary hot bath of 100° F. or over, or, better still, the hot wet pack. A radiant heat bath is probably better than either where this can be procured without exposing the patient to the risk of subsequent cold. Warmth and equability of temperature are very important during the first forty-eight hours of an attack.

So much, then, for the etiology, pathology, and general indications for treatment of fibrositis. Let us now proceed to consider the condition as it appears in the various parts of the body; and first, as to its manifestations in the neighbourhood of the joints. One of the characteristics of the condition is that one

joint only is usually affected. This is the rule, to which there are, of course, exceptions, but it is seldom indeed that more than three are affected. In recurring attacks it is nearly always the same joint which is involved, and, if any joint in the body has ever been the seat of injury, it is tolerably certain that the fibrositis will select that one. When once the process has established itself in a joint there is not, as in true rheumatism, any tendency to leave that joint and go to another. The complaint in connection with the affected joint is one of pain and impaired mobility, the latter usually depending very much upon the former. The pain is not often to be described as merely chronic; it is much more often subacute, and occasionally it is even acute. It is aggravated by sudden and violent movement, and varies greatly with changes of temperature and atmospheric humidity. The arthritis is never accompanied by fever, and it has no tendency to produce endocarditis or other complications.

The medicinal treatment of this manifestation of 'rheumatics' is not very successful. The salicylates, especially in the form of aspirin (10 to 15 grains three times daily), are occasionally beneficial, though I have had better and more uniform results from iodide of potassium and guaiacum (10 grains of each three times daily). Antipyrin, together with salicylate of sodium, is a useful combination, especially where pain is a prominent symptom; but this combination is less useful here than in the neuralgic type of the

affection. Locally, the application of warmth is invaluable. A hot douche, which, in the case of such joints as the wrist, knee, or ankle, can be improvised at home by holding the part under a hot tap, is an excellent expedient, to which recourse may be had two or three times a day with great advantage. Hot fomentations, especially when frequently repeated, are also very useful, and compresses of potassium iodide and citrate of lithia often seem to hasten resolution. Local exposure to radiant heat is in my experience one of the very best means of bringing about resorption and disappearance of the fibrous thickening which is the essence of this condition.

Although it is, on account of the pain, necessary to keep the joint for the most part at rest, this must not lead to forgetfulness of the fact that movement is absolutely essential to anything approaching a satisfactory issue. This movement must at first be slight and passive, but as the pain subsides it should become free and active. An enormous amount of avoidable crippling is brought about by allowing patients to 'coddle' joints thus affected. Movement is the essence of the cure, and if it is neglected the joint very readily becomes stiff and disabled. Of course, the movement must be applied with sympathy and discrimination. It is better that the doctor himself should do it during the acutely painful period, if there be one, and as soon as circumstances permit he may delegate the duty to a competent masseur, or,

where such is not available, it is usually not difficult to instruct a member of the household in this means of restoring function.

These and similar measures are in very chronic or recurrent cases much better carried out at a spa than in the patient's own home. It is, indeed, in the treatment of such cases that the baths, douches, and massage for which such places are famous, justify most completely the confidence which is now so generally accorded them. Of Continental summer resorts Aix-les-Bains justly enjoys the highest reputation, but Vichy, Luchon, Baden-Baden, and many others, are fully equipped for the treatment. In winter Salsomaggiore, in Italy, is a place to which such patients may very suitably be recommended. In this country at Buxton, Woodhall Spa, Llandrindod and Harrogate in summer-time, and at Bath and Sidmouth in winter, the necessary treatment is admirably carried out; and by no means the least advantage of the home stations is that the practising physicians have, owing to the English climate, opportunities for gaining an amount of experience in the various phases of the condition which is denied to their continental brethren.

MYALGIA.—If, of the pains of arthritic fibrositis, it may be said that they are subacute more often than chronic, of those of myalgia, or muscular fibrositis, it may be affirmed that they are acute more frequently than subacute. They vary, of course, as do the others. They are generally confined to one set of muscles, as

those of one shoulder-joint or one side of the neck (torticollis); they are usually relieved by firm pressure, and are invariably worse at night. This aggravation at night, or rather in the early morning, is very characteristic. The patient wakes in great pain, so great that he doubts the possibility of being able to dress himself; nevertheless, when he begins to move, even in his bed, he finds that matters are not so bad as they at first seemed, and by the time he gets downstairs his troubles may have resolved themselves into stiffness and fear of sudden movement. The onset of myalgia is generally sudden, occasionally so sudden as to give the impression of a blow, and when it starts in this way it is apt to be very acute.

Lumbago is often quoted as the typical form of myalgia. This in my opinion it certainly is not, for the reason that in most cases, if not in all, the fibrous tissue in connection with structures other than muscle are always involved. Luff[1] is certainly right when he says: 'In the majority of cases of lumbago the affection is not in the quadratus lumborum, nor even in the deeper muscles of the back, but is in the fibrous tissues directly over the sacro-iliac joint and in the joint itself.' It is from the spreading of the inflammation along the sheath of the sciatic nerve that we find lumbago and sciatica so frequently associated.

A much better instance of myalgia, though even here tissues other than the muscular are often included, is supplied by deltoid and brachial myalgia.

[1] *Clinical Journal*, October 11, 1905.

This is liable to be very acute, and is generally of long duration; it is of all others perhaps that which is most conspicuously influenced by meteorological variations, and subject to nocturnal exacerbations. Stiff neck, or torticollis, is another good instance. This is especially common among young adults, and is fortunately very amenable to treatment.

Myalgia will often pass off in a few days without anything more heroic in the way of treatment than a hot application and some rubbing. More often, however, it becomes obstinate to household remedies and demands careful management. Internally nothing can compare with iodide of potassium, and externally nothing is so efficacious as massage. The latter, to be effectual, should be applied twice a day by someone who is conscious of the needs of the situation. Mere superficial effleurage is useless. The muscles must be handled gently but firmly, so as to promote the lymph-flow within their substance. This will cause a certain amount of pain at first, especially if the operator be unskilful; but, in spite of this fact, the treatment must not only be continued, but it must be reinforced by the application of warmth in the form of poultices and fomentations and by the addition of stimulating liniments. A good plan is to rub the part with liniment of iodine and then apply a poultice. Camphor liniment and chloroform liniment are also useful for this purpose. Luff[1] prefers anodyne applications, and recommends a mixture of equal parts of

[1] *Loc. cit.*

chloral hydrate, camphor, and menthol, which he says, when well rubbed together, form a liquid. Methyl salicylate and mesotan are in his experience also very valuable. But, whatever the medicament employed, a large part of its power for good resides in the method of its application, and unless this includes vigorous massage — as vigorous, that is, as pain will permit—the virtues of the drug will remain largely inoperative. For chronic cases, the massage should be accompanied by douching, as at Aix-les-Bains, by light baths, or by electricity.

Lumbago, as we have just seen, is a mixed fibrositis, partly muscular, partly aponeurotic, and largely arthritic, and inasmuch as it is so frequently accompanied by sciatica, it may be considered as in a sense neuralgic. Acute lumbago is startling and disabling. It is startling from the extreme suddenness of its onset, and disabling from the fact that the trunk cannot be moved except with great pain, so that the patient is obliged to remain in bed. It is most common in men, at or about middle age, who usually present themselves with a diagnosis ready made; for 'lumbago' with the laity means any pain in the small of the back. Such a diagnosis should, of course, never be accepted, and we ought to be careful always to examine the back, the knee and plantar reflexes, and the urine, before confirming it. I have known very grave mistakes to be made through initial negligence of these very simple precautions.

A line of treatment which was much in vogue

twenty years ago for a sudden attack of lumbago consisted in a hot bath (100° to 103° F.), a dose of Dover's powder (12 grains), and a drachm of sweet spirits of nitre, supplemented by a linseed-and-mustard poultice to the loins. This I still believe to be an admirable course of procedure in a large number of cases; but I have learnt to distrust the action of the opium, especially in the very patients—namely, those about middle life—who are most prone to suffer from the complaint, so that I came to use James's powder, (pulv. antimonialis) 5 grains, in its stead, and to give therewith a mercurial cathartic. This method I have found to be not only more efficacious, but entirely free from the disadvantages attaching to the exhibition of opium in such cases.

For the rest, it is only necessary to reiterate what I have said above as to the value—I would almost say the paramount importance—of massage and stimulating applications in the further treatment of the condition, and the necessity for regulating the diet of the patient so as to eliminate as far as possible meat foods and alcoholic drinks. As long as pain is present the patient must keep his bed, not only on account of the pain itself, but because of the fact that equability of temperature is an important feature of the cure. Cold influences are not only in the highest degree unpleasant, but they tend above everything else to prolong convalescence and retard recovery.

The **NEURALGIC FIBROSITIS** which so often accom-

panies lumbago may occur independently thereof, and, when so occurring, it may be regarded as the type of an affection which is liable to attack almost any nerve in the body, some common examples of which are supplied by cervico-brachial neuralgia (often called neuritis), intercostal neuralgia, coccydynia, and plantar neuralgia. In sciatica, as in lumbago, we should be especially cautious in accepting a ready-made diagnosis, for pain along the sciatic nerve may be due to causes other than fibrositis ; and if the pain is markedly worse at night, or, if both sciatic nerves are involved, it is tolerably certain that some much more serious factor is in operation.[1] A 'sciatica' may be caused by a loaded rectum, by uterine and ovarian displacements, by tumours and disease of the spinal cord itself, and such possible factors should always be carefully and exhaustively investigated before the pain is pronounced to be due to a neuralgia, and treated as such.

For this purpose it is important to determine whether the pain is due to pressure, or to some factor in the nerve itself or in its sheath. In the former case the pain will not be sensibly aggravated when the nerve is put on the stretch ; it may, indeed, be to some extent relieved by the process, whereas, when the mischief is in the nerve or its sheath, the stretching will obviously increase the pain. In order to set this point at rest,

[1] F. J. Smith, 'Mistakes' (*Clinical Journal*, December 27, 1905).

the patient is placed upon his back and the pelvis firmly fixed against the bed by an attendant. The limb on the affected side, which must be kept fully extended at the knee, is then gently and gradually raised by the examiner until it is at right angles to the couch. This will put the nerve on the stretch, and if no aggravation of pain results, then the cause is to be sought outside the sheath of the nerve; it is not due to a fibrositis, and the condition is not, properly speaking, a sciatica.

So far as the treatment of sciatica is concerned, there is not much to add to what has already been said in connection with other forms of fibrositis. Massage, which is of the utmost importance in all these forms, is in sciatica the one local remedy upon which any great reliance can be placed. Dr. Lee[1] says: 'It is in sciatica, of all the neuralgias, that massage has won its greatest reputation. Truly astonishing results have been obtained, even when the affection has been of many years' standing, and after every other conceivable means of relief has proved unsuccessful.'

This coincides completely with my own experience, and since I have used massage perseveringly, assisted in suitable cases by douching and the application of stimulating liniments, I have had no occasion to resort to acupuncture, surgical stretching of the nerve and other heroic remedies which are often recommended, and which the tedious nature of these cases

[1] Hare's 'Practical Therapeutics.'

so often suggests to the despairing physician. If massage were employed early in all cases, few would become chronic; and if it is persevered with in cases which have become chronic, even to the causing of marked wasting of the muscles, it will in time always bring about a cure. Some of the antineuralgic drugs, which will be noticed presently, may also be used concurrently. Some of them, especially phenozone and butyl-chloral, have often seemed to me to do good in the way of rendering the massage more tolerable. Without massage these drugs may be palliative, but they are never curative, as they are in neuralgia due to causes other than fibrositis.

It would be easy to multiply instances of the manifestations of the 'rheumatics' as they occur in various parts and structures, but no good purpose would be served by so doing. The essential points to remember are that these manifestations are due to inflammation of white fibrous tissue; that they may be acute, subacute or chronic; that they are seldom or never accompanied by constitutional disturbance; and that they are very amenable to treatment, more especially by iodide of potassium internally; and externally, by massage, passive movements and stimulating applications.

NEURALGIA.—Pain which follows the distribution of certain nerves is a very common disorder. It may, as we have just seen, be due to fibrositis; but, so far at any rate as the smaller nerves are concerned, it is much more often due to other causes. Chief among

these are unsatisfactory blood states. That neuralgia is the cry of a nerve for healthy blood is an oft-quoted saying, and certain it is that undue toxicity of the blood, from whatever cause arising, is an important, as it is certainly the most common, agent in the causation of pain. For toxins in the blood act not only by direct irritation of a nerve, but they also act, as in gout, by causing vaso-constriction, thus depriving the nerve of its due quantity of nutritive material. Burney Yeo suggests that a factor of an opposite kind is not infrequently in operation—namely, that the blood state may give rise to vaso-dilatation, and that it is a kind of blushing in the neighbourhood of the nerve which determines the pain.[1] However that may be, all that it is necessary to realize is that impure blood is the most important cause of neuralgia, and that it may produce this effect not only directly, but also by interference with the normal vasomotor mechanism. Another cause, scarcely less in importance, is the existence of an irritant causing fatigue of the involved nerve.

The presence of a neuralgia, then, should suggest—(1) a fibrositis, (2) an unsatisfactory blood state, and (3) the existence of an irritant. With the first I have already dealt; there remain, therefore, the other two to consider. Of unsatisfactory blood states the commonest is surely anæmia. Whether this be due

[1] See also 'The Vasomotor Factor in the Pain of Migraine,' by Dr. Francis Hare, *Clinical Journal*, January 24, 1906.

to convalescence from acute disease, to mere chlorosis, to deficient coagulability of the blood,[1] or other cause, it is very frequently attended by neuralgia, more especially about the head and lower part of the trunk on one side.

The treatment of such cases resolves itself into the treatment of the anæmia by suitable hygienic, dietetic, and medicinal means. So far as hygiene is concerned, an out-of-door life in a bracing climate is strongly to be advised. The diet should be generous, including meat foods and wines—preferably a good Bordeaux or Burgundy—and plenty of fats. Fats seem to be concerned in some very special manner with the nourishment of the nervous system, and in the form of butter and cream they may be freely given to such patients as we are now considering. The best medicine is undoubtedly iron, but the stronger salts, the sulphate and perchloride, are much less efficacious than the citrates and tartrates. The two latter are readily assimilated, whereas the former are very apt to upset the stomach. A useful formula is as follows:

℞ Ferri ammon. citrat. ... ... gr. x.
Liq. arsenicalis ... ... ♏iii.
Inf. quassiæ ... ... ad ℥ss.
M. Sig.: Ter die post cib.

As the patient's strength improves it may be desirable to substitute the following:

[1] Ross, *Lancet*, January 20, 1906.

℞. Ferri quin. citrat. ... ... gr. xx.
Liq. arsenicalis ... ... ♏v.
Tr. nucis vom. ... ... ♏iv.
Aquam aurant. flor. ... ... ad ℥ss.

M. Sig.: Ter die post cib.

The presence of quinine, even in such doses, may help to subdue the neuralgia. When giving iron in any form and for any purpose, it is of the utmost importance to keep the bowels open. This is best done by means of aloes at first, because this drug enhances the effect of the iron, and later by cascara. A daily morning dose of a natural mineral water is also very useful.

But where the neuralgia is an obtrusive feature of the condition, it is generally necessary to prescribe something which has a direct influence upon the pain when this occurs. In anæmic cases and in all those in which defective nutrition is pronounced I have had better results from quinine and gelsemium than from any other combination.

℞. Quin. mur. ... ... gr. v.
Acid. hydrobrom. dil. ... ... ♏xx.
Tr. gelsemini ... ... ♏x.
Aquam chloroformi ... ... ℥ss.

M. Sig.: Every twenty minutes till pain ceases. Not more than four doses to be taken.

This mixture, like most others where the relief of pain is concerned, acts better in small doses repeated at short intervals than in single large doses.

The state of the blood in goutiness is such as to

be highly provocative of neuralgic pains. Inasmuch as this condition and its treatment are fully considered in another chapter, it is here only necessary to emphasize the advisability of examining for high arterial tension in all cases of neuralgia, and where this is present, to point out the value of iodide of potassium in the treatment of the accompanying neuralgia. As this is the most potent of all drugs in counteracting the gouty state generally, a gouty neuralgia ought very readily to yield to the measures proper to the treatment of the blood state itself. Occasionally, however, it does not, and then it is well to have recourse to the following combination:

℞. Sodii salicylat. } ... ... āā gr. v.
Phenazon }
Syr. zingiber. ... ... ʒi.
Aq. chloroformi ... ... ad ʒi.

M. Sig.: Every quarter of an hour until pain ceases. Not more than four doses to be taken.

This is a most admirable combination in the migrainoid neuralgic attacks to which the gouty are peculiarly prone. I have appealed to it in a very large number of cases, and so far never in vain. For a reason which it does not seem possible to explain, the combination of these two drugs is infinitely more effectual than either given alone. When directed to be taken as above, the mixture acts better than in single large doses.

A fruitful and easily overlooked cause of neuralgia, especially in women, is the toxic blood state induced

by chronic constipation. This must be treated by the curing of the vicious habit on the lines laid down in Chapter III.; but here again we may have to treat the neuralgia concurrently with the treatment of the constipation, in which case the phenozone and salicylate mixture just described will usually be found the most useful, though quinine and gelsemium are to be preferred where, in consequence of the long duration of the constipation, the patient is anæmic and emaciated.

Neuralgia is considered by some as a hysterical manifestation. This, of course, it may be, though hyperæsthesia is less characteristic of hysteria than anæsthesia. Neuralgia certainly occurs frequently in neurotic women, but I have generally found that there is some discoverable and removable cause for the neurosis of which the neuralgia is an occasional manifestation, and this cause is more often than not a peripheral irritation, of which the origin is to be found in the teeth, the ears, or the eyes. Such irritation, when acute, is a recognised cause of neuralgia in those who are not neurotic, and there is no difficulty in supposing that, when chronic, it may give rise to that nervous instability to which the term neurotic is applied. A common site for such irritation is the ovarian region. Examination of this region in neurotic women will often reveal pain on pressure over one or both ovaries, in which case infinitely the best drug to use is belladonna. It is usefully combined with phenozone, and its adminis-

tration should always be accompanied by the application of blisters, small in size, but frequently repeated, in the region where the pain has been elicited.

A practical point of considerable importance in connection with the management of these cases is characteristically expressed by Goodhart, in that altogether admirable little work 'Common Neuroses' (which should be carefully read by every young practitioner) in the following passage:

'I have said it is a bad day for a man when he first knows he has a heart; it is a ten times worse day for a woman when the pelvic pains to which so many are subject are focussed for her by medical opinion upon uterus or ovary. If there is anything which curdles my blood, it is to hear a woman talk of her ovaries as she might of some intimate acquaintance.'

In the manufacture of incorrigible neurotics the word 'ovarian,' blurted inadvertently from incautious lips, is a common and potent ingredient.

Irritation within the buccal cavity is a frequent cause of facial neuralgia; and it should be remembered that it is not only teeth which are obviously carious which may produce this result, but, as Savill[1] points out, careful examination, by tapping the teeth, or by the application of hot and cold liquids alternately, will often reveal the existence of an irritated pulp in an apparently sound tooth, the proper treatment of which is necessary to a cure. For the relief of neuralgia of facial or cranial distribu-

[1] 'A System of Clinical Medicine,' vol. ii.

tion arising from such a cause butyl-chloral is probably the best of all internal remedies. It should be given in pill form, 5 grains every half-hour until pain ceases; not more than six pills to be thus taken. It is usefully combined with gelsemine, which is another drug with a selective influence over cranial neuralgias. For this purpose the pil. butyl-chloral c. gelsemina (Martindale) is very useful. Local applications are not usually accounted of much value in facial neuralgia, but I have found that the lin. aconiti carefully painted with a camel-hair brush over the area occupied by the pain is not only helpful in assisting the action of drugs taken internally, but that it is in some cases sufficient of itself to cut short an attack. For the vague, ill-defined neuralgic and 'rheumaticky' pains of which people not infrequently complain, I have found chloride of ammonium, 20 grains, combined with tr. cimcifug., 20 minims, more effectual than any of the above-mentioned remedies.

One of the most valuable drugs for the relief of neuralgic and neuritic pains, wherever situated, is acetanilid (antifebrin). In spite of its undoubted powers in this direction, even where such pains as those of tabes are concerned, it has of late fallen into disuse. This has been due in a large measure to the fact that it is credited with the production of untoward effects. This is in reality only partly true. When properly employed, it is no more dangerous than any of the numerous drugs which daily flow, freely and callously, so to speak, from the point of

the prescriber's pen. First, then, as to dose. The old official dose of 10 grains is too high, at any rate, to start with. It is better to begin with 2 grains, which will in many cases be found sufficient. If not, the dose may be gradually increased to 10 or even 15 grains. It should not be increased above the latter if, the physiological effect having been produced, the pain fails to yield. This physiological effect is slight cyanosis. The lips and nails become a dusky red. This effect has in a great measure been responsible for the disuse into which the drug has fallen. There is nothing alarming about it, and it is necessary to remember that, as in the case of so many other drugs, the curative virtues of acetanilid very often decline to show themselves until this physiological effect has been evoked. These facts seem worth insisting upon, because, apart from morphia, acetanilid is in my judgment by far the most powerful anti-neuralgic at our disposal. It will relieve the pains of locomotor ataxy and of other organic diseases of the nervous system when nothing else will, and he who allows himself to be frightened by the occasional cyanosis which it causes, deprives himself of a most valuable therapeutic agent. That its use requires a certain amount of caution is not a sufficient reason for abandoning it. Acetanilid being practically insoluble in water, is best given in cachet, combined either with salicylate of sodium (10 grains) or camphor monobromat (6 grains).

It is scarcely necessary to mention morphia as an

anti-neuralgic, except to say that it is not employed as often for this purpose as it might be. It is, of course, most undesirable that its use should be prolonged, but there is no objection to exhibiting it for the relief of pain, pending the action of other remedies. For the intense neuralgia which sometimes accompanies true influenza and other acute toxæmias it has no equal. Its use in recurrent neuralgias is undesirable, not only on account of the patient, but also for the sake of the practitioner, who, unless he is careful, will find himself urgently summoned at all hours of the day and night to administer the necessary dose. This, which is unsatisfactory enough, is on the whole preferable to entrusting, as is too often done, a needle and a bottle of tabloids to the all too willing patient.

Another unduly neglected means of relieving neuralgic pains, in suitable cases, is leeching. One would not, of course, recommend it in weakly, anæmic subjects, but in full-blooded individuals the relief it gives often approaches the miraculous. This is especially true where the pain seems to be in, or to radiate from, the ear. A leech placed behind the ear and allowed to take its full quantity of blood will often give complete relief where other means have failed.

HEADACHE.—There remains to be considered a highly important peripheral irritant, perhaps the most important of all in the causation of neuralgia, which I have left to this stage that I might discuss it in associa-

tion with headache, to which it also gives rise with great frequency—namely, eye-strain. Where eye-strain is concerned neuralgia and headache may be regarded as synonymous terms, for it is impossible to be certain where the one ends and the other begins. And I may say at once that these two conditions by no means exhaust the troubles to which eye-strain may give rise. It is, as we shall see presently, a frequent, though too often unsuspected, cause of neurasthenia, melancholia, intemperance, and drug habits, to say nothing of such minor matters as irritability of temper, dyspepsia, constipation, and 'sluggish liver.'

The first point to remember in connection with eye-strain—and it is one upon which it seems very necessary to insist—is that the condition is produced, not by gross defects, but by slight ones; not by high degrees of errors of refraction, but by minor ones.[1] So much is this the case that patients are often indignant that any aspersions should be cast upon their eyesight, which, they will protest, has always been exceptionally good. And the truth is that such patients *are* able to see as well as anyone, for the reason that, the defect being slight, it has always been well within their power, by contracting the ciliary muscle, to overcome the defect. In the case of those with gross defects no amount of ciliary contraction enables them to see clearly, and so the effort, even if it is ever made, is very early abandoned.

[1] See 'Refraction of the Eye,' by Ernest Clarke (Baillière, Tindall and Cox).

In the case of those with minor defects the difficulty arises from the fact that it is no more possible to keep the ciliary muscle contracted for hours on end than it is to keep any other muscle in the body so contracted without giving rise to fatigue. Especially does this apply when astigmatism is present, as the ciliary muscle is then contracted not only continuously, but also irregularly. The difference between the ciliary and other muscles is that in the latter the symptoms of fatigue are easily recognised as due to fatigue, but in the case of the eye, so long as the vision remains unimpaired, the seat of origin is almost certain to go undetected. The patient sees well, but in the majority of cases, he does so at a cost which, physiologically speaking, he cannot afford to pay. He lives well up to the limit of his nervous income, and any slight unexpected attack will very readily project him into bankruptcy. It is when he has reached this state that he appeals to his doctor to be relieved of a headache or an attack of neuralgia. For, be it remembered, the pains which are caused by eye-strain are by no means always present; frequently—indeed, generally—they require some extraneous cause to provoke them. As long as the patient is permitted to pursue the even tenor of his way, he is able to live within his income and keep his enemy at bay; but no sooner is that even tenor disturbed, as by worry or an over-generous dinner, than he finds himself at the end of his resources, with his enemy at his throat. The factor

which in a very large number of cases supplies the disturbing element is the advance of time. As long as a man is young and vigorous his nervous income is equal to almost any strain, but as years wear on this income gradually diminishes, and as he approaches the presbyopic age, when another disturbing element awaits him, he is always more or less on the margin of symptoms. When the presbyopic age is actually reached, and the lens has lost a great deal of its original elasticity, the ciliary muscle has still more work thrown upon it, and consequently such symptoms are liable to be of very frequent occurrence.

The nature of these symptoms varies within very wide limits. Neuralgia and headache, with which we are for the moment especially concerned, take the first place. Neither the distribution of the neuralgia (except that it is generally cranial) nor the type of the headache, affords any indication that it is the eyes which are at fault, so that it is all the more important to keep constantly reminding ourselves of the now well-established fact that where either of these symptoms cannot be traced to any obvious cause, eye-strain is, in all probability, the main factor in their production. Another common effect of refractive errors is giddiness. This is liable to occasion very considerable alarm to patients, who are generally afraid that it indicates intracranial mischief. To medical men it generally suggests gastric disorders, aural troubles, or circulatory disturbances. These are

all common causes, but probably the most common, especially in people about middle life, is that which is least frequently remembered—namely, ocular defects, which are slight, and therefore unsuspected by the patient.

Nausea and vomiting, as we have already seen (*vide* Chapter III.), are often due to eye-strain. In these cases, as in most others, it is to be remembered that something more than eye-strain itself is generally required to precipitate an attack. That something is often so slight a matter that it altogether escapes notice unless the presence of eye-strain, acting as a chronic underlying irritant, is realized. In all these cases it is the summation of slight stimuli which produces the effect, and of these slight stimuli that which is constant and ever present is the one whose removal is important. With that gone the others cease to be operative.

But the manifestations of eye-strain are not all so definite as the foregoing.[1] The condition, indeed, expresses itself even more frequently in forms, which, until we are familiar with its almost unlimited capacity for producing indefinite symptoms, are very difficult of recognition. 'The Autocrat of the Breakfast Table' says that it is better to lose a pint of blood from your veins than to have a nerve tapped. Now, that is precisely what eye-strain does: it taps

[1] See 'The Medical Aspect of Eye-Strain,' by Ernest Clarke, *Clinical Journal*, October, 1905. 'Eye-Strain as a Cause of Headache,' by L. H. Jessopp, *Practitioner*, July, 1906.

a nerve. The energy runs to waste, and the whole cerebro-spinal system becomes exhausted. When once the outline of this picture is clearly discerned, it is by no means difficult to fill in the detail. For cerebro-spinal exhaustion, though it has no symptoms by which it may with certainty be recognised by the doctor, has a very real existence for the patient. In its slighter degrees it may mean no more than the deprivation from a particular viscus, say the stomach, of its fair share of nervous energy, leading to dyspepsia; or it may spell an evident want of control in the higher cerebral centres, causing irritability of temper, undue emotionalism, or a craving for stimulants. In more pronounced degrees it will cause the grouping of symptoms to which the term neurasthenia is applied. It may cause hysterical ebullitions, and may even be responsible for epileptic attacks. In degrees still more pronounced it may lead to melancholia, and even to suicide. There is, in short, no functional disturbance of any portion of the central nervous system which may not own eye-strain as its essential cause, so that it is impossible to insist too strongly upon the importance to every practitioner of being able to detect slight errors of refraction. Into the details connected with the necessary examination it is impossible to enter here, but the following hints may serve as a useful guide.

1. *Objective Examination.*—(*a*) Defects of vision may be suspected if the patient screws up his eyes or places his head on one side in order to

read or to see some object at a distance. If there is a hyperæmia of the margin of the lids, generally the upper lid, an error of some kind is usually the cause; and if a patient under forty years of age presents an arcus senilis, especially if one eye only be thus affected, it is almost certain that the premature degeneration has been brought about by eye-strain of some kind.

(*b*) When the eye is examined by the *indirect* method with a concave mirror and focussing-glass, **Hyperopia** is present if the disc is larger than usual, and appears to diminish on withdrawing the glass from the eye; **Myopia** is present if the disc is smaller than usual, and seems to enlarge on withdrawing the glass; and **Astigmatism** is present if the disc is oblong and appears to alter in shape on withdrawing the focussing-glass.

(*c*) By *direct* ophthalmoscopy. **Hyperopia** is present if convex glasses improve the view of the fundus; **myopia**, if concave glasses do so; and **astigmatism** shows itself by parts of the fundus being out of focus, while other portions at right angles are in focus.

2. *Subjective Examination.*—**Hyperopia** is probably present if the patient's vision is not made worse by convex glasses; **myopia** is suspected if the patient's reading distance is nearer than normal; and **astigmatism**, if the patient can read some of the letters in the lowest line of the distant type, but makes mistakes even when reading a line half-way down; or if, when looking at radiating lines, put at a distance

of 4 to 6 metres, some of the lines look blacker than others.

It must, however, be distinctly borne in mind that if the patient is not under the influence of a cycloplegic, these tests, if *negative*, prove nothing, as he may be, and probably is, involuntarily correcting his error.

Eye-strain is, however, by no means the only kind of chronic peripheral irritation which may give rise to headache. Dental troubles which fall short of gross caries, frequently produce it, overcrowding of the mouth, owing to eruption of the wisdom teeth, being a common and often unsuspected cause. Impairment of respiratory power, brought about by obstructions in the nose and throat, are other easily overlooked causes, chief among them being deviations of the septum and other factors acting upon one nostril only. Aural troubles of every sort should always be carefully examined for.

A form of headache which presents special features, and concerning whose ætiology there has been a great deal of speculation, is *migraine*, or hemicrania. The latter name is applied to it because the pain generally begins on one side of the head, and is sometimes confined to that side throughout the attack. The characteristic of migraine is its periodicity. The attacks recur at intervals, though not necessarily at regular intervals, and their origin is exceedingly difficult to trace. Migrainous people, like epileptics, are always more or less liable to an attack, and, like epileptics, they have premonitions;

they know the sort of influence which may affect them, and immediately after an attack they know that they will enjoy immunity for a variable time. The attacks usually begin, significantly enough, with some ocular phenomenon, such as flickering lights of various forms and zigzag lines of colours in different parts of the field of vision; then follows an intense headache, accompanied generally by nausea, vomiting, and extreme prostration, which may last for varying periods. At the end of forty-eight hours the patient is generally well again.

To understand the phenomena presented by migraine we have, as in epilepsy, to assume some underlying instability of the nerve-centres, which are provoked into a stormy condition by stimuli which leave ordinary individuals unaffected. The attacks are common in the studious, in the sedentary, in the highly cultured, and are rare in the bucolic. In the light of what has been said above on the question of eye-strain, and the capacity of this condition to produce a disturbance of nervous equilibrium, coupled with the fact that migrainous attacks are almost invariably accompanied by ocular phenomena, very special care should be taken to eliminate this element in every case. A very large number of people have slight defects of vision, and such slight defects, while harmless to the peasant of robust organization, may very readily provide a constant irritant to the studious of delicate organization, and thus contribute a powerful underlying cause for

the attacks. A migrainous person should be examined very minutely by physician, oculist, aurist, and gynæcologist, and any defect in any department, however slight, which could possibly act as a cause of irritation, should be removed. The physician should pay particular attention to the cardio-vascular system, the oculist to the state of the refraction, and the aurist to any remediable errors in the ear, throat, or nose. If nothing abnormal can be discovered, then we are reduced to attempting to lessen the general nervous reactive sensibility by hygiene, diet, and the exhibition of bromides. A country, open-air life, a diet free from stimulating foods and alcoholic drinks, and the bromide of ammonium in 10-grain doses, three times daily, for a week every now and again, will very often keep the enemy at bay. During the attacks rest and a darkened room are essential. When taken in time—that is, before the attack has had time to develop—the phenozone and salicylate mixture above prescribed (see p. 160) will often—indeed, generally—act admirably. I have found it superior to phenacetin (10 grains), in which some people, however, express great confidence.

Upon headache as a symptom of *intracranial mischief* it is unnecessary to dwell. When the pain, as in migraine, is accompanied by vomiting, the fundus oculi should always be examined for anything suggestive of optic neuritis, and careful search should be made for other physical signs of organic disease in the nervous system. Intracranial tumours and

meningitis are causes which should always be borne in mind.

There is a certain class of headache which is occasionally described as *congestive*. The term is misleading, because headaches due to a diversity of causes might legitimately be so called. If, however, we qualify the term by the adjective 'mechanical,' it is possible to recognise a separate and distinct group. Headaches due to mechanical congestion are produced by factors which are easily overlooked. Anything which interferes with the proper circulation of the blood may occasion them, and in ordinary life tight corsets in women and tight collars in men will be found to be common causes. This type of headache, which is described as a general fulness, aggravated on stooping, may be the first indication of the existence of a lesion at the mitral valve, so that a complaint of such a nature, more especially when it is accompanied by a history of epistaxis, should always lead to a careful examination of the cardiac area.

Nasal obstruction, whether from enlarged tonsils, adenoids, or deviations of the septum, is exceedingly likely to cause headaches of the congestive type. The two former are nowadays very readily recognised, and very promptly—perhaps too promptly—removed, but the latter is often allowed to continue unremedied. Nasal deformities constitute an exceedingly common cause of headache in adults, and as they are nowadays easily remedied, there need be no hesitation in advising their radical cure, even

in people who have passed middle life. The correction of these deformities must be left to the expert, but I would suggest that the most speedy, complete, and lasting benefit is to be obtained from the recently introduced method of submucous resection, by which the cartilaginous and bony obstruction is entirely removed, leaving a fleshy septum, an intact mucosa, and a clear air-way.[1]

Headache is very often caused by *change of climate*. The removal of a person from sedative to bracing conditions, and, even more frequently, *vice versâ*, commonly brings about changes in the vascular pressure, which, in the absence of adequate reactive power in the individual (in the convalescent, for example), very frequently cause headache and depression of spirits. If these symptoms do not pass off in a few days, it may be necessary to resort to treatment. Where the headache has been induced by relaxing climatic conditions, a mixture containing 2 grains of quinine and 5 minims of liq. strychnin. will generally do all that is necessary. Where, on the other hand, the climate is 'too strong,' as the expression is, 10 grains each of the iodide and bromide of potassium three times a day will be found useful. In each case the mixture should be preceded by a dose of calomel.

[1] St. Clair Thomson: Proceedings of the Laryngological Society, London, May and June, 1904; Transactions of the Clinical Society, London, October 25, 1905; *Lancet*, June 30, 1906.

Pain in the head of a superficial character, such as seems confined to the scalp, is a frequent accompaniment of '*colds*' *in the head*. In such cases the pain is usually due to a fibrositis of the tissues overlying the skull, and is to be treated on lines already suggested.[1] Headache is a common symptom of *neurasthenia*.

Most headaches are due to what are comprehensively described as *blood-states*. A good instance is supplied by chlorosis, in which the headache is due to the abnormal condition of the corpuscular elements; and the same is presumably true where the symptom appears in leukæmia and other associated conditions.

The offending blood-state in the majority of cases is, however, a toxæmia. There are numerous familiar instances of this. All the specific fevers are liable to be ushered in with a headache more or less severe, and the poisons of alcohol and lead almost invariably cause the symptom. Among the toxæmias due to defective excretion, kidney disease and diabetes are classical instances of causative factors while chronic constipation is probably both the commonest and the most generally overlooked. In all these cases the discovery of the cause immediately points the way to the proper treatment, and some people have endeavoured to aid in the discovery of the cause by mapping out certain cranial areas in which pain occurs, and attaching to each area a particular group

[1] See Chapter I.

of causes. Thus, pain which is mainly vertical is said to be due to the following: anæmia, hysteria, neurasthenia, epilepsy, and disease of the uterus or appendages. A headache which is chiefly frontal is deemed gastro-intestinal, renal, ocular, syphilitic, or myalgic. An occipital headache is considered suggestive of intracranial mischief and spinal irritation. While believing a great many of these to be fanciful, I think there is no doubt that headaches due to defective elimination, such as those caused by uræmia, diabetes, constipation, and impure atmospheres, are generally frontal, and that those which appear in functional nervous troubles seem to have a preference for the vertex; but even in such cases it is not wise to attach much importance to so variable an element as the site.

In everyday life it is certainly the toxins of gastro-intestinal origin which are most frequently responsible for the occurrence of headache. These toxins generally act by interfering with the intracranial vaso-motor mechanism, causing now undue contraction, and anon, undue dilatation, of the cerebral vessels. The indications in either case are the same—namely, to cut off the supply of the toxins, and to promote the excretion of those already absorbed. The means of doing this are fully discussed in the chapter on Goutiness, so that here it is only necessary to emphasize the importance of dietetic simplicity, such as absence of meat foods and alcoholic drinks, and of excretory vigour by means of purgatives

and diuretics. Stress may, perhaps, be laid on the importance of the latter, which seem very generally to be neglected. The salts of potassium, especially the iodide and citrate, are most useful, but the best of all renal stimulants is undoubtedly theobromine. Some physicians, who are possessed by the uric acid bogey, object to this drug on account of its close relationship with xanthine and the other purin bodies. An over-curious regard for these would, however, lead also to the condemnation of caffeine, whose efficacy as a heart tonic in suitable cases is second only to that of digitalis.

Whatever its connection with other bodies with the radical C_5N_4, and however dangerous such a connection may seem theoretically to be, there can be no doubt that theobromine is the most active renal evacuant we possess, and it may be prescribed with every confidence in all cases where we are desirous of ridding the system of a toxin, such as a nitrogenous toxin, which is normally disposed of through the kidneys. It is best given in cachets of 15 to 20 grains three times daily. It occasionally operates as a drastic purgative, in which case the dose must be lessened. Some people prefer to give it in the form of 'diuretin,' in which it is combined with a salicylate.

In addition to general evacuants, it is generally desirable to prescribe measures directed to the relief of symptoms. Where there is reason to suppose that the headache is due to vaso-constriction, liq. trinitrini

is very useful. Its effect, however, is transitory, and it should not, for obvious reasons, be frequently repeated. It is best given in conjunction with hydrobromic acid—thus:

℞. Liq. trinitrini ... ... ♏iv.
Acid. hydrobrom. dil. ... ... ♏xx.
Aquam ... ... ad ℥ss.
M. Sig.: Ter die.

Another useful drug for the symptomatic treatment of headache is cannabis indica. If given as the tincture, in combination with other drugs, it must be suspended in mucilage; it is, therefore, better to give it separately in the form of extract, of which from ½ to 1 grain may be made into a pill with lycopodium and given three times daily.

G. W. Ross, in a valuable paper contributed to the *Lancet*,[1] describes a chronic headache which shows itself as a dull, heavy ache, worse in the morning and tending to wear off as the day advances, and accompanied by mental and physical lassitude. This, he says, is associated with deficient coagulability of the blood, and yields readily to the exhibition of chloride of calcium (see Chapter VIII.).

In very persistent headaches which resist all treatment, it is well to try the effect of a blister on the nape of the neck, to be kept open with savin ointment for a week or ten days on end. I have known this expedient succeed where other measures had failed.

[1] January 20, 1906.

ADDITIONAL FORMULÆ.

For Neuralgia, especially when Intercostal, or due to Eye-strain.

℞. Phenacetin ... ... gr. x.
Caffeine citrate ... ... gr. v.

M. Ft. pulv. in cachet i. Sig.: Every two or three hours till pain ceases.

For Neuralgia, Migraine, and the Pains of Organic Nervous Disease and Menstrual Troubles.

℞. Pyramidon, gr. v. to viii., dissolved in water, three times daily.

Hypnotics (Whitla).

(*a*) ℞. Paraldehyde ... ... ℥i.
Mucil. acac. ... ... ℥ii.
Syr. simpl. ... ... ℥ii.
Aquam cinnamom. ... ... ad ℥ ii.

M. Sig.: To be taken at bedtime.

(*b*) ℞. Lupulini ... ... gr. iii.
Camphor ... ... gr. iii.
Ext. hyoscyam. ... ... gr. iii.

M. Ft. pil. ii. To be taken at bedtime.

(*c*) Sulphonal (gr. xx.), Trional (gr. x. to xxx.), and Veronal (gr. v. to x.) are all valuable hypnotics. They should, however, be accompanied by appropriate remedies when the sleeplessness is due to pain.

(*d*) Bromidia (Battle) is a useful hypnotic. It contains chloral, potassium bromide, and cannabis indica.

Local Applications.

(*a*) ℞. Lin. aconite
Lin. chloroform. } ... ... āā ℥ii.

Sig.: To be gently rubbed into the painful part in myalgia or other fibrositis.

(*b*) Dr. G. H. Kenyon strongly advocates the local application of tartarated antimony in lumbago. The ung. antimon. tartarat. is thoroughly rubbed into the part twice daily, if necessary, until the characteristic pustules make their appearance (*British Medical Journal*, January 13, 1906).

(*c*) Antiphlogistine (Denver Chemical Manufacturing Company) is a convenient and, in some cases at least, a very efficacious form of stimulating local application. Over poultices it has the great merit of cleanliness and asepticity ; to fomentations it is to be preferred in that it need only be applied once in twenty-four hours. It contains *inter alia* glycerine, boracic and salicylic acids, eucalyptus and iodine.

CHAPTER V.

GOUTINESS.

Goutiness is a sufficiently common and sufficiently well-understood term, but inasmuch as it is also a very elastic one, I must begin by explaining the limitations which are here applied to it. First of all, then, we must exclude acute articular gout and those forms of subacute gout, such as tophaceous, as are usually described. Neither need we consider such conditions as renal and hepatic calculus. These are, in many cases at any rate, truly gouty in origin, but they are also in the nature of classical complaints, whose symptoms, diagnosis, and treatment are fully set forth in standard works. With these exceptions the whole field of troubles caused by the gouty diathesis is open to us, but I may as well say at once that I do not propose to try and exhaust it; I shall, however, endeavour to include the most important points, and shall seek to lay stress upon those which seem to me to require emphasizing.

In considering any question connected with gout, one is immediately brought face to face with

the numerous and very divergent theories which have been expressed on the subject of its causation by very competent observers, and one finds one's self forced to confess that very little is really known concerning it. Fortunately, however, that does not prevent us from obtaining a very fair workable estimate of it from a clinical standpoint, nor from being able to treat it with a measure of success. Gout, it is generally agreed, is due to insufficient or perverted metabolism, leading either to the formation of material which is foreign to the healthy economy, or to the inadequate discharge of normal excreta. Whichever of these views is correct matters nothing for our purpose. What we have to realize is that there is a something circulating in the blood which, in its endeavours to escape, may project itself, so to speak, upon any organ or tissue, and that the form which the gouty manifestation will assume will depend upon the organ or tissue selected. What determines that selection in any particular case it is quite impossible to say. Thus the 'something' may project itself into the neighbourhood of joints, causing a chronic gouty arthritis; it may project itself into the sheaths of nerves, causing a gouty neuritis; it may project itself on to the integument, to cause a gouty eczema, a gouty psoriasis, and, what is contrary to general belief, a furunculosis. It may attack the air-passages to cause pharyngitis, laryngitis, bronchitis, or asthma; it may find its way to the stomach and cause dyspepsia; it may select the brain and give

rise to irritability, somnolence, and disinclination for work; it may provoke a cystitis, and, according to some, even a urethritis. There is, in fact, no part of the body which can be said to be free from the liability to invasion by the gouty poison, and fortunate indeed is he who, being obliged to suffer manifestations of the diathesis in any situation, suffers them in some painful and easily recognisable shape rather than in the painless, insidious, but far more inexorable, forms of arterio-sclerosis and kidney disease.

The main thing, then, to remember about gout is not to forget it. In the presence of a disturbance of any sort, in any part of the body, it is wise to ask ourselves the question 'Is this due to gout?' Many of us who do not forget the question are, perhaps, too liable on insufficient grounds to answer it in the affirmative, but such an attitude is less liable to lead to disaster than omission to remember it. The points upon which a correct answer to such a question depends are too numerous to enter into here. They involve such matters as heredity, habits, aspect, slight manifestations in other organs, and the like, which can in reality be acquired only by clinical observation and experience. There are, nevertheless, some points in connection with the condition of which the most experienced may profitably remind himself, some of which we will now briefly consider.

Gouty symptoms are rare before middle life, and when that period is reached they are commoner in

those whose youth has been athletic. Our national pride in outdoor sports might well be tempered by the consideration that the habit of body which these sports engender is very apt to lead to gout in those who, having once indulged in them, are ultimately condemned to a sedentary existence. The boy is father of the man, and the man is apt to suffer if he is unable to continue the catabolic activity to which the boy has accustomed the organism. It is said that women do not suffer from gout. This is true only in so far as acute 'big-toe' gout is concerned; for women certainly suffer very frequently from irregular gout, especially in the form of headache, neuralgia, and bronchitis, and after the menopause they exhibit a very decided tendency to conform to the types, such as chronic arthritis, skin affections, and dyspeptic troubles, which are so common in men.

The chief cause of gout, in whatever form it may appear, is want of balance between intake and output. Either the intake is too great or the output is too small. Not infrequently both factors are in operation. So far as the intake is concerned, the excess is not necessarily one of quantity. Meat foods and alcohol, even when taken in what is usually considered moderation, by a predisposed person leading an inactive life, are very powerful producers of gout; and, in the same way, a man who takes a great deal of exercise may be very gouty if he indulges too freely in the pleasures of the table. The discovery of a gouty manifestation, then, immediately provides two cardinal indications:

the one is to check the source of the poison, the other is to aid and hasten its elimination. The first of these is met by prescribing and insisting upon a suitable dietary ; the second, by increasing metabolism and invoking the active aid of all the emunctories.

In the matter of diet the most important point is the reduction of the alcoholic drinks. Beers and wines in contradistinction to spirits are often spoken of as peculiarly productive of gout. It is no doubt true that the beer-drinker is more liable to gross and obvious forms of the malady than the spirit-drinker, but to argue from this that spirits are harmless to a goutily-disposed person is to play the part of the ostrich. Spirit-drinking, though it may not provoke arthritis or eczema, is in the highest degree calculated to cause arterial degeneration and granular kidneys, and these, though less strikingly, are no less truly gouty in origin than the others. That spirits, not being productive of gout, are therefore harmless and even 'wholesome' to gouty people is a heresy which would be ridiculous were it not so pernicious, and no words of condemnation are too strong for him who aids in its dissemination.

Alcoholic drinks of all sorts are in the highest degree harmful to the goutily inclined, and the larger the percentage of the contained alcohol, the greater is the harmfulness of the beverage. The first thing to do, then, with a gouty person is to make him, if possible, into a teetotaller. The 'ostrich' view of the question should be impressed

upon him, and it should be brought home to him that it is practically impossible to check the manufacture of an article except by stopping the supply of the raw material.

If we have happily succeeded in this endeavour, our next care should be to convert him into something approaching a vegetarian; for after alcoholic drinks, the ingestion of meat foods takes the highest place in the production of the malady. In the time of our forefathers there was a saying that the gouty patient should have three meals a day—'one of fish, one of flesh, and one of neither.' This may be a useful formula for a recalcitrant patient, whom we are trying to persuade into the paths of physiological righteousness, but it is far indeed from being a counsel of perfection. The three meals of a person with definite manifestations of goutiness in any form (I am not now referring to such as are merely goutily disposed) should consist of one of fish or flesh and two of neither. Even the one of fish or flesh represents in the judgment of many a concession which it is sometimes necessary to make to the weaker brethren, for the less nitrogenous food of animal origin which a patient can be induced to take, the more rapidly and the more completely will he get rid of his troubles. There are, of course, nitrogenous foods *and* nitrogenous foods, and there seems no doubt whatever that those which, roughly speaking, are obtained without the sacrifice of animal life are less deleterious to gouty people than those which entail

such sacrifice. For instance, milk, cheese, eggs, and the pulses (peas, beans, and lentils), though rich in nitrogen, are, compared to flesh, poultry, fish, and game, very poor in the constituents which help in the elaboration of the gouty poison. It is from the former, then, that the gouty patient should be encouraged to draw his nitrogenous supplies, and it should be made clear to him that, in the presence of a manifestation however slight, the latter will prolong the attack and militate against the action of remedial measures.

It used formerly to be believed that sugar was productive of gout. Although this is now very generally recognised as fallacious, there seems to be some measure of truth in it, inasmuch as sweets are very liable to upset the stomachs of gouty people. This they do more especially when introduced into that organ without having been thoroughly insalivated. Gouty people who are afflicted with a sweet tooth, as the saying is, should therefore be warned against indulging it unduly; and it should be explained to them how they may indulge it with the best prospect of doing so with impunity — namely, by efficient mastication.

Another question closely connected with diet, which has been engaging a considerable degree of attention during the last few years or so, is the part played by common salt in what we may call the indirect causation of many morbid conditions which are associated with faulty metabolism and insufficient excretion. It

has been recognised since 1850 that the chlorides are retained in the body during acute illnesses, to be discharged *en masse* as soon as convalescence sets in. It has also been known for a long time that œdematous fluid contains a very large percentage of common salt, which is excreted by the kidneys as soon as the œdema disappears. Another fact which has been recognised for some time is that the amount of NaCl contained in the blood itself, is always the same under all normal circumstances, quite irrespective of the amount ingested—that is to say, if more is ingested the surplus is immediately excreted.

Now, Widal[1] has shown that in many conditions which are associated with renal inadequacy, of which goutiness may be taken as a type, the inadequacy first shows itself by an undue retention of chlorides. The common salt passes out of the bloodvessels into the tissues. Here it attracts to itself fluids, and œdema is the result. This œdema is at first visceral and deep-seated, so that clinically it is not easy to detect, except by careful comparative observations of the patient's weight. And, as one would suppose, among the first of the viscera to be attacked are the kidneys. They become œdematous, and, consequently, to their inadequacy in the matter of chlorides there is superadded a general inadequacy.

Thus it is that chlorides, though not poisonous in

[1] *La Presse Médicale*, June 29, 1908, and *Compt. Rend. Soc. Biol.*, 1904. See also *Treatment*, August, 1908, and an article in *The Practitioner*, August, 1905, by J. H. Bryant.

themselves, very easily lead to the retention of other matters, and of these other matters, many are highly toxic. Widal has, in fact, shown that, in kidney affections, uræmic symptoms may be provoked or suppressed at will, by largely increasing or greatly diminishing the amount of common salt ingested.

In view of these facts, it is obvious that chloride of sodium constitutes a very grave potential danger to the goutily disposed, and we should be particularly careful to warn such against the habit of adding large quantities of salt to their food. For the same reason, highly salted foods, such as bacon and salt-fish, are better avoided, and those natural mineral waters which contain large quantities of NaCl—and a great many of them do—should not be recommended as habitual laxatives. Widal's work teaches us a further lesson of some importance—namely, that the amount of chlorides in the urine offers a very fair gauge of the functional renal capacity of the patient, thus helping us to a very early diagnosis of renal inadequacy.

Having by these dietetic regulations so arranged matters that the supply of the poison shall so far as possible be checked, our next care is to help in the disposal of that which has been already formed. To this end a vigorous appeal must be made to all the excretory organs for aid in ejecting the invader. Now, it is to be remembered that no appeal to the excretory organs is ever successful which is not accompanied by a liberal supply of fluids. An abundance of water

is necessary to the action of each and all of them, and to ask them to excrete poisons without fluid is to ask them to make bricks without straw. It is said by those who wish to belittle the spa treatment of gouty conditions that this treatment is successful only because of the large quantities of fluid which the patients are made to consume. It is not necessary to give adherence to this suggestion in order to learn a lesson from it. If the ingestion of large quantities of water, as water, is beneficial at health resorts, it must be equally beneficial at home; and certain it is that if a gouty patient can be induced to take, say, from 2½ to 3 pints of water in the twenty-four hours, he is materially aiding his recovery in a most essential particular.

So much being established, let us see when and how the water is to be taken. First and foremost, it should be taken before meals, and not with or after meals. Half a pint may be taken half an hour before breakfast; about half a pint at 11 a.m.; the same quantity half an hour before luncheon, and again at 4.30 p.m.; before dinner a similar amount, and before bedtime a full pint. This is a large quantity, but if all the excretory organs are to be kept working vigorously, it is not too much. The question of how the water is to be taken, whether hot or cold, whether plain or with additions, must be left to individual tastes and peculiarities to decide. Some people will take water hot when they will not take it cold; some will take water in which tea has

been infused, or to which some fresh lemon-juice has been added, when they will not take it plain; others, again, will attach virtues to a water poured from a bottle which they will deny to that which is drawn from a tap. These are largely matters of fancy on the part of the patient and of diplomacy on the part of the doctor; the only suggestions on the subject which I have to make are that still waters are preferable to sparkling waters, and that lightly mineralized waters are preferable to those which are strongly charged. Inasmuch as fresh lemon-juice is believed, by many observers whose opinion is entitled to respect, to have a beneficial influence upon some, at any rate, of the gouty manifestations, it is well to encourage its use; for even if it has no other merit—and, as will appear presently, I am one of those who believe that it has—it can certainly claim to render the dose more palatable.

Among drugs which possess a general influence in aiding the elimination of the gouty poison, iodide of potassium stands pre-eminent. There is no gouty manifestation which does not yield in a large measure to its intelligent employment—and by intelligent employment I mean its association with other drugs or measures specially directed against the particular manifestation present. The mistake which is usually made in connection with it is fear of large doses. The ordinary dose of 2 grains is much too small. If the drug is given at all, it should be given in doses which commence at 10 grains, and,

curious though it may seem, the larger quantity is infinitely less liable to produce coryza and the other symptoms of iodism than the smaller.[1] If there is any suggestion of a rash appearing in consequence of its administration, a few drops of Fowler's solution added to the mixture readily prevents further trouble.

Another drug which is very valuable in counteracting the gouty poison, and one which resembles iodide of potassium in the fact that the exact nature of its working is still hidden from us, is guaiacum. The two may very suitably be given together in cachet form:

℞. Pulv. guaiaci } ... ... ãã gr. x.
Potass. iodid. }

M. Ft. cachet. Sig.: One three times daily.

If the guaiacum causes purging, the dose must be reduced, or 5 or 10 grains of creta præp. added to each cachet. In any case the cachet should be followed by a draught of water. It is not desirable to give guaiacum in a mixture. Patients readily rebel against it on account of its unpleasant taste and objectionable consistence.

The salicylates, while regarded by some writers as excellent remedies in gouty conditions, are loudly condemned by others, notably in France. The objection urged against the salicylates, especially that of sodium, is that they are depressing and have an irritating effect upon the kidneys. There may be some truth in this, but my personal experience with aspirin (10 to 20 grains) has so far been quite

[1] See Chapter VIII., p. 310.

favourable. It is, however, well to remember the renal charge which is, on the Continent, very actively brought against it. Many people complain that the salicylates are inert. When this is true, it will usually be found that they have been combined with alkalies, and I find, in point of fact, that the combination of salicylate of sodium and bicarbonate of sodium is a very favourite one. When salicylates are given they should be prescribed either alone or in conjunction with such a drug as nux vomica, which does not influence their chemical medium; for in the body they play the part of acids, and it is in virtue of this action that they do good.

Another acid whose virtues in the gouty state have recently been attracting considerable attention on the Continent is phosphoric acid. According to the experiments of Joulie[1] it would seem that gouty manifestations are due to the retention in the blood of matters whose escape is favoured not by alkalies but by acids, and the acid which he has fixed upon as most potent in this connection is phosphoric acid. I believe there is a large measure of truth in his contentions; at any rate, I have been successful in giving relief with dilute phosphoric acid where iodide of potassium and guaiacum had failed me.

Citric acid, in the form of lemon-juice, has often been lauded in the management of the gouty

[1] 'L'Acidité Urinaire,' par M. H. Joulie (*Revue Générale de Clinic*, Paris, 1901). See also 'La Médication Phosphorique,' Dr. Jean Nicolaidi (Paris, Octave Doin, 1904).

diathesis. This drug, when taken in large doses—say ½ ounce in the course of the day—undoubtedly renders the blood more fluid by precipitating the calcium salts. What it does with these salts is a matter which still seems to await investigation; at any rate, they disappear from the blood, thus rendering the fluid more mobile and better fitted for its purpose of bathing and flushing the various tissues, and so promoting efficient excretion. I believe citric acid to be a most useful general corrective to the gouty tendency.

Having now paved the way for the efficient action of the excretory organs by ensuring for them an adequate supply of water, and having, by the action of the above-mentioned drugs, rendered the process of elimination more easy, let us inquire into the best means of setting these organs to work. So far as the bowels are concerned, if guaiacum is given, then the quantity in the above cachet may do all that is necessary. Where it does not, some purgative salts, preferably sulphate of magnesium, in doses of 30 grains, with nux vomica (*vide* p. 112), should be added to the morning dose of water, and also perhaps to the evening dose; or some of the natural aperient waters which are not overburdened with NaCl may be substituted.[1] Either course is much to be preferred

[1] Arabella water, which contains chiefly the sulphate and bicarbonate of sodium, may be said, for practical purposes, to be free from the chloride. It has therefore a special value in gouty cases.

to the exhibition of cholagogue cathartics, which are so often recommended. There is no objection to an initial dose of calomel (say 2 to 3 grains): it is an excellent measure, especially in sthenic cases; but the practice of a sustained exhibition of hepatic stimulants is much to be deprecated. It was introduced in conformity with the theory that gout in all its forms was due to some dereliction of duty on the part of the liver, which could be counteracted by stimulation of that organ. As this theory is very far from being established, and as the continuous administration of cholagogues has well recognised drawbacks, the practice is not to be recommended. In gouty conditions the liver, together with all the portal radicles, require unloading, but this may be done quite efficiently with the mixture above prescribed, especially when this is occasionally reinforced by small doses of calomel (1 grain), podophyllin (½ grain), iridin (2 grains), or euonymin (1 grain).

The excretory organs to whose action the greatest importance is, in this connection, universally attached are the kidneys. It is my purpose to avoid as far as possible expressing an opinion about any of the theories concerning the causation of gout, but it is safe to admit that uric acid and the biurate of sodium are both in a measure actively engaged in producing the symptoms of the complaint; and as these substances are normally excreted by way of the kidneys, it is obvious that anything which tends to increase renal activity will materially aid the dis-

charge of these matters, and thus lessen the incidence of the manifestations. The importance of fluid, which, as already stated, is considerable in the case of all the excretory organs, is here paramount, and water must therefore be exhibited in full quantities. As aids to its discharge by the kidneys rather than by any other route, it is well to have recourse to diuretics.

There are diuretics, such as digitalis and scoparium, which act by increasing the general blood-pressure, including that in the kidneys. As will appear later on, the blood-pressure in the gouty already rules over-high, so that such drugs are carefully to be avoided. The routine prescription of digitalis, bad as it is in cardiac disorders, becomes, in conditions accompanied by high arterial tension, something in the nature of a therapeutic crime. It increases the arterial tension and acts as a diuretic only when œdema is present. For diuretics in the gouty state, then, we must look to those which increase the renal activity without raising the blood-pressure—such, for example, as the salts of potassium, the infusion of buchu, and theobromine.

Fothergill says that buchu has upon the urinary passages the same inexplicable soothing influence which bismuth has upon the digestive apparatus. This I believe to be true, and it has often seemed strange to me that so valuable a drug should recently have fallen into disuse. It is by no means unpalatable, and it increases very conspicuously the functional activity of the kidneys. Of the salts of

potassium, those which are most used are the citrate and bicarbonate. No one, I imagine, now gives these salts in the vain hope of increasing the alkalinity of the blood, so as to obtain the solution of uratic deposits; but whatever the motive with which they are given, there can be no doubt either that they exercise a beneficent action over the symptoms, or that they increase very materially the renal activity. It is probable that such merits as these and all other alkaline salts may possess are due mainly, if not entirely, to their action as diuretics; and that the salts of sodium, even though they be, as some are still found to maintain, wrong in theory, are useful in practice, owing to their possessing a similar eliminative action.

To insure the adequate discharge of the excreta from the kidneys, we have, then, to see, first, that enough fluids are being taken. The importance of this is so obvious that it seems absurd to dwell upon it, and in reality my only reason for so doing is to point out that the rule is liable to an exception. If there is too much fluid in the vessels, the urine is scanty because there is undue pressure in the kidneys. In such circumstances, to increase the amount of fluid ingested is to decrease the amount of urine excreted. If, therefore, after a few days the urine fails to increase in quantity, the fluids should be decreased until the urine flows freely. The next thing to do is to construct a prescription which will include such diuretic drugs as will assist

in the discharge of this fluid by the renal route. If the cachet[1] be discontinued, we can include its most important ingredient, the iodide of potassium, in this prescription, which would then be as follows:

℞. Potass. iodid. ... ... gr. x.
Potass. citrat. ... ... ʒss.
Inf. buchu ... ... ad ʒi.
M. Sig.: Ter die.

If, as is not altogether infrequent, the patient be anæmic, 5 to 10 grains of the potassio-tartarate of iron may suitably be added to this mixture, which should be taken immediately after the three principal meals of the day.

There is another time-honoured drug which is not used as frequently in these conditions as it might be —this is spts. æth. nitrosi. When combined with citrate of potassium and acetate of ammonium, as in the following formula, it makes a very useful and agreeable mixture, increasing notably the flow of urine and acting, to some extent, as a diaphoretic.

℞. Potass. citrat. ... ... ʒss.
Spts. æth. nitros. ... ... ʒi.
Liq. ammon. acetat. ... ... ʒss.
Aquam ... ... ad ʒii.
M. Sig.: In a tumblerful of water three times a day.

In connection with spts. æth. nitros. it is important to remember that it must *not* be combined with iodide of potassium, as the result is an explosive mixture.

A diuretic of which Professor Huchard speaks in

[1] Page 194.

the highest terms is theobromine. He prefers it to diuretin, in which it is combined with salicylate of soda, because he believes that the latter is very liable to irritate the kidneys. Of theobromine (which he prescribes in 10 to 15 grain cachets, three times daily) he says: 'It is one of the most powerful and reliable diuretics with which I am acquainted. It is by far the best medicament in all cases where we desire to increase the secretory activity of the kidneys, and I prescribe it all the more confidently because it does not increase arterial tension, nor has it any effect upon the strength or frequency of the cardiac contractions. It acts solely upon the renal secretory elements.'

The natural mineral waters of Contrexéville, Vittel, and Evian have very powerful diuretic properties, and may be prescribed with great confidence for all gouty patients. These waters can be obtained in bottles in this country, but it is infinitely preferable to send the patient to the spring itself, as there is reason to believe that a measure of their efficacy is lost either in the bottling process or in transit. Of these three places, Evian, situated on the Lake of Geneva, is much the most agreeable. It has a very fine bathing establishment, and its waters act very markedly in increasing the renal output.[1]

The next most important excretory organ is the

[1] See A. E. Wright, *Lancet*, April 2, 1904, 'On a New Method of Testing the Blood and the Urine, with Special Reference to the Excretory Efficiency of the Kidney.'

skin. There are several drugs which increase cutaneous activity, chief among which is pilocarpine. This is a useful drug in many contingencies, and may occasionally be helpful in the gouty state, but the condition in which it is most generally recommended is precisely that in which it ought never to be employed—I mean uræmic poisoning. Pilocarpine induces not only a free flow of perspiration, but it induces also a great increase of bronchial, laryngeal, and tracheal secretion, and if the patient is partly insensible, these secretions may very easily choke him. Those who have a fancy for pilocarpine should reserve its use for patients who are conscious, and avoid it carefully in uræmia and other semi-conscious states. On the question of pilocarpine, I may mention parenthetically that it is one of the most useful of all drugs in the treatment of pruritus, whether local to the anus or vulva, or associated with a skin disease such as eczema, or even when general, such as sometimes causes so much distress in old age. It should be given in doses varying from $\frac{1}{8}$ to $\frac{1}{4}$ grain, and when combined with atropine, say $\frac{1}{120}$ grain, it does not cause inconvenient perspiration.

In ordinary goutiness, however, the skin is best stimulated by means other than drugs. Pre-eminent among these stands muscular exercise in the open air. This should be sufficient, but not excessive; sufficient, that is, to induce free perspiration without, at the same time, giving rise to more waste products than the organs can conveniently deal with. When

we are trying to dispose of an excess of a material we must be careful not to pursue a policy which may have for one of its results the production of that material, or a similar one, in increased measure. The nitrogenous waste which is produced by muscular exercise has to be excreted for the most part by the kidneys, and it is well that these organs, which already stand in need of stimulation, should have no more work cast upon them than is absolutely necessary.

A good substitute for muscular exercise is to be found in baths of various kinds combined with massage. These are undoubtedly best administered at a health resort, under the guidance of an experienced physician who is accustomed so to graduate them as to obtain the maximum benefit with the minimum of fatigue. Hot baths followed by massage may be administered at the patient's own house, but when this is done, careful instructions should be given as to temperature and duration. The temperature of the first few baths should not exceed 100° F., and their duration should be limited to ten minutes. Both may be cautiously increased until the one reaches 105° F. and the other twenty minutes. Each bath should be followed by massage or shampooing, and thereafter the patient should be swathed in flannels and encouraged to perspire by the administration of hot water. Such baths are, however, inferior to the hot wet pack which I shall presently describe.

Turkish baths, though excellent in many respects, have this against them: that very few, if any, of the establishments in which they are administered are adequately ventilated, so that the bather, especially when he is in the hot rooms, is breathing an atmosphere which is loaded with the cutaneous and pulmonary excreta of others. The home Turkish bath, of which there are now many patterns on the market, is not open to this objection; but, then, it is lacking in those agreeable elements of shampooing, douching, coffee, cigarettes, and gossip, which reconcile people to the discipline when administered in well-conducted establishments.

Of all the forms of bath obtainable under ordinary circumstances in large towns, that which I have learned to value most highly is the radiant-heat bath. The addition of light to the hot air certainly seems to confer upon the latter properties which in the absence of light it does not possess. At the Dowsing Institutes, of which there are now a great number all over the country, these baths are well and carefully administered. They may be followed by massage if so desired, but even without this addition, I know of nothing so well calculated to stimulate cutaneous activity and to bring about resorption of gouty deposits in properly selected cases.

Of routine household procedures nothing can compare with the hot wet pack. This is an old method, which has become unduly neglected. It is useful in a great variety of conditions, and as it is practically

always available, I shall describe it in detail. All that is required is a mackintosh sheet, two ordinary blankets, a cotton sheet, a hot-water bottle, a pail of boiling water, and a wringer; all of which, except the last-named, can be obtained in an ordinary household. The wringer can be manufactured at short notice by hemming in enough of the two ends of a towel to allow a walking-stick to be passed through each end easily. The mackintosh is placed on the bed, and on top of it, the two blankets fully spread out. The sheet, having been wrung out of the boiling water, is then laid on the upper blanket. The patient is then placed on the sheet, so that his occipital prominence is on its upper margin. With the patient's arms raised, the upper corner of the sheet on his right side is carried across and tucked under his left scapula. With his arms by his sides, the opposite corner is brought across and tucked under his right scapula. Each blanket is then carried across in a similar manner, the hot-water bottle is placed near the feet, and the free ends of all the coverings are tucked under the heels. In a period varying from twenty to forty minutes perspiration will be found on the forehead, and that is the signal of sufficiency. The temperature taken in the mouth generally shows a rise of 1 or 2 degrees. After a tepid or cold sponging the patient is removed to bed, on which the coverings should not be too heavy. Two or even three of these packs may be given in a week. Patients, especially children, for

whom they are very useful in many conditions, always enjoy them, and an intelligent nursery nurse can be taught to administer them quite satisfactorily.

The use of such means as are above indicated for stimulating the skin, derives its importance, not only from the point of view of excretion, but also from the point of view of vascular dilatation. One of the effects of the gouty poison (whatever it may be) is to irritate the bloodvessels, especially the arterioles and capillaries, causing their contraction, and thus giving rise to heightened arterial tension. Now, high arterial tension, if long continued, leaves its mark upon the vessel walls in the form of arterio-sclerosis, and ultimately, in the form of dilatation and relative insufficiency, upon the heart itself. The involvement of the coronary arteries in the sclerotic process may give rise to anginal attacks, and the inclusion of the renal arteries to cirrhosis.

But we need not multiply examples in order to realize the necessity for taking early steps to overcome the chronic contraction of the bloodvessels, which is the direct cause of the increased blood-pressure. The general measures, dietetic and medicinal, already indicated, especially the avoidance of meat foods and alcoholic drinks, together with the exhibition of mercury and potassium iodide, will in the long-run do much in this direction; but cutaneous stimulation by means of baths and massage causes prompt dilatation of the vessels over an enormous area, which lasts a considerable time, and may be

repeated frequently. The assistance in combating the condition to be obtained by such dilatation is the secret of a large portion of the success which attends the balneological treatment of these cases.

So much, then, for the management of the gouty state in general. Let us now consider how we are to treat the various symptoms of this state as they arise in different parts of the body. The most important are those which affect the joints, causing a subacute or chronic arthritis. When this arthritis is a legacy from an acute attack, its treatment, in so far as it differs from what has above been indicated, resolves itself into that which is laid down in all the text-books as proper to the attack itself.[1]

Into the details of this it is not necessary to enter here, but I should like to say that where pain is at all obtrusive colchicum is the best palliative, and that it is desirable to withdraw the remedy as soon as the pain has subsided. There are, however, a great many varieties of gouty arthritis which are truly chronic from the beginning, attacking various joints, notably the small joints of the hands and the metatarso-phalangeal joints in the feet, giving rise to enlargement and deformity rather than to pain. This is the so-called chronic deforming gout, so frequently labelled chronic rheumatism, which is by no means easily distinguished from rheumatoid arthritis, especially if we make the mistake of concentrating our attention upon the local manifestations of

[1] See p. 164

the disease to the exclusion of the general state of the patient. For in the gouty condition there is, as a rule, no difficulty in discovering the existence of sthenic manifestations in other organs or tissues, whereas in rheumatoid arthritis not only are such manifestations absent, but the clinical picture is essentially one of asthenia, demanding not an eliminative but a generous régime.

The arthritis of chronic gout is probably more amenable to electric light baths than to any other therapeutic measure. The baths, especially when combined with massage, bring about the absorption of the deposits with a rapidity and completeness which is astonishing to those who have never tried them. Hot-air baths, douches, and the various measures of a similar kind which are employed at health resorts, stand next in order of efficacy, and where the patient's means permit, it is always well to advise a visit to a suitable spa.[1]

For the rest it is important to insist that chronic gouty joints should not be allowed to become fixed and deformed for want of exercise and movement. Massage is an excellent measure, so is electricity; so, in fact, is anything which will insure

[1] Vichy and Royat are two places which may be recommended with confidence. Aix-les-Bains has deservedly a world-wide reputation. Buxton, Bath, Harrogate, Woodhall Spa, and Llandrindod offer exceptional advantages to people who prefer to stay at home. It should be remembered that the ingestion of sulphur waters seldom suits the gouty; their external application does.

regular stimulation. In this direction much can be done by the patient himself, and there is generally no difficulty in inducing him to do it, if it is brought home to him that ultimate recovery of a crippled joint depends more upon his willing and intelligent co-operation than upon the assistance of others. Stimulating liniments are very useful adjuncts, especially when applied after the part has been steeped in hot water. Poultices and compresses containing bicarbonate of sodium or citrate of lithium are also very helpful in reducing swelling and restoring movement.

A method of treating stiff and painful joints which is very highly spoken of by some, is cataphoresis, by which medicinal substances are transferred to the joint through the unbroken skin by means of the constant electric current. Theoretically the positive pole should be that to be placed in contact with the drug, but clinically it is found that some drugs penetrate better with the negative pole, and amongst these are iodide of potassium and salicylate of sodium. A procedure which has seemed to me to give good results is to paint the part with iodine, and then place upon it a pad of lint which has been steeped in a solution of lithium citrate. The positive pole is then placed on the pad, and a current of about 10 cells is allowed to flow. When the pad is removed the colour of the iodine will be found to have disappeared. Whether this fact has any 'suggestive' effect in bringing about the result I am unable to say.

I feel I ought not to leave this question of gouty or rheumatic arthritis without saying a word in connection with the reprehensible practice of lightly dismissing joint troubles in children as due to this cause. Such troubles, it is true, are seldom labelled gout, but they are labelled rheumatism with a frequency which is far from creditable. The truly rheumatic state in children so rarely takes the form of an arthritis that, apart from the disease closely resembling rheumatoid arthritis and associated with the name of Dr. Still, such a condition may almost be said not to exist. Rheumatism in children shows itself as chorea, tonsillitis, subcutaneous nodules, erythema, purpura, and the like, but seldom or never as an arthritis. An enlarged or stiff and painful joint in a child, therefore, especially if only one joint be involved, is exceedingly unlikely to be rheumatic or gouty in origin, and great care should be taken in so describing it. Such conditions are more often due to tubercle than to anything else. Their progress is fraught with considerable anxiety, and their treatment demands the utmost care and watchfulness. Numberless limbs have been sacrificed and lives lost owing to the loss of precious time, due to the otiose diagnosis of 'a little rheumatism' where arthritis in a child has been present.

Of abarticular gout there are a great many forms. Chronic pharyngitis is by no means uncommon, chronic laryngitis is common, and chronic bronchitis is not rare. The gouty poisons as they affect the

lower air-passages seem, however, to void themselves in acute explosions rather than in chronic irritation. Thus, an acute bronchitis of gouty origin is an exceedingly common event. It is important to remember this, because bronchitis is invariably attributed to chill, and if we allow ourselves to be beguiled by such etiological suggestions we shall fail to treat the case as it should be treated—namely, by mercurial purges and the addition of iodide of potassium, and perhaps some colchicum, to the drugs intended to combat the bronchial irritation. Asthma is another very common form of gouty ebullition. Inasmuch as iodide of potassium is one of the most useful remedies in ordinary spasmodic asthma, failure to recognise its gouty origin is, so far as the attack itself is concerned, not of much consequence; the recognition becomes of importance only when we are considering the best means of providing against further attacks, and if we do not realize their true origin, our precautionary measures are likely to prove singularly ineffectual. One of the commonest associations of asthma, which is a symptom and not a disease, is with high arterial tension. As this important question is considered in some detail later, it is here only necessary to call attention to the fact, and to insist that the high tension should be treated by appropriate means, rather than the asthma relieved by habit-provoking sedatives.

The gouty affections of the nervous system consist in myalgia, neuralgia, neuritis, insomnia, mental

irritability, mental depression, migraine, and epileptiform attacks.

In the skin the diathesis may show itself as an eczema, a psoriasis, an erythema, and, contrary to what is generally believed, as furunculosis. Boils are commonly regarded as a symptom of asthenia; they are, especially when occurring in successive crops, in my experience much more often due to the gouty poison. Why this poison should favour the activity of staphylococci in the hair follicles it is difficult to say, but that it does so is, to my mind, abundantly clear.

An excellent treatment for boils consists in the administration by the mouth of pills of calcium sulphide (1 grain) three or four times daily (smaller doses are useless), and the local application of ichthyol ointment (about 15 per cent.). This does a great deal of good where the boil is a 'singleton,' relieving very considerably the local pain and hastening resolution. Where, however, the boils, as is often the case, tend to appear in successive crops, the patient should be injected with antistaphylococcic serum. This treatment, introduced by A. E. Wright, is practically painless; there is no constitutional disturbance, and the result is uniformly satisfactory. It does not, of course, in any degree influence the underlying gouty condition, which should be treated on the lines already suggested.

In treating of boils and carbuncles, when once established, a mistake which is often made is that of allowing them to heal prematurely by scabbing, with

the result that the retained poison shortly seeks exit by a neighbouring hair follicle, and another boil is the result. An old woman's remedy, consisting of a mixture of sugar and soap, is very effectual in preventing this. A. E. Wright explains this efficacy by showing that this curious combination prevents the lymph from clotting, and as a scab consists of clotted lymph, the effect of the soap and sugar is to keep the door open for the exit of the poison. It is often said that boils should not be poulticed or fomented, because such applications are apt to produce a crop of smaller ones in the neighbourhood. Poultices are not easily rendered aseptic, but they can be applied with safety if the skin be first smeared with thymol vaseline. Fomentations wrung out of boracic solution are usually quite safe, but even here the use of the thymol ointment is an advantage, because the vaseline lessens the chance of irritation from slight scalding.

Gouty men tend to become bald early, probably owing to vaso-constriction of the arteries in the scalp, and their nails assume a reedy appearance from longitudinal striation.

So far as the other skin manifestations are concerned, such as gouty eczema, in the existence of which some dermatologists affect to disbelieve, they are to be treated locally according to dermatological rule; but if their recurrence is to be prevented, their underlying gouty cause must receive adequate attention on the lines already laid down.

In the eye, gouty iritis and gouty conjunctivitis are common. These conditions, when of gouty origin, are less liable to be acute than when they own some other cause, and consequently the local treatment need not be so vigorous. A blister and a few hot fomentations, and perhaps a little atropine, are all that is required. If the blood state is properly treated the condition will quickly yield.

In the alimentary tract dyspepsia is very common. The indigestion of gouty people is usually, but not invariably, of the sthenic variety, demanding alkalies and bismuth; but it may, on the other hand, be asthenic, and require hydrochloric acid and pepsin for its relief.[1] Another form of indigestion—namely intestinal indigestion—is much more common in gouty people than is generally supposed, more especially in such as take large quantities of alcohol. It takes the form of diarrhœa[2] often accompanied by flatulence. It is generally painless, and is usually confined to the morning. If possible, it is well to refrain from interfering with this discharge; the flux should, indeed, be encouraged by mercurial cathartics, for the process is entirely beneficial, in that it rids the system of effete matters without irritating the kidneys. Tannigen (10 grains in cachet) is an excellent simple astringent. Tincture of catechu (1 drachm) is another. Whatever is used, it is

[1] *Vide* chapter on Indigestion.

[2] *Vide* Constipation and Diarrhœa, p. 117.

important to remember that neither lead nor opium should ever be prescribed.

The connection between gout and kidney disease is one which has long been recognised. There exist, however, very decided differences of opinion as to the exact nature of this connection; and yet the matter does not seem to present any very great difficulties. Luff expresses the balance of modern opinion on the subject of gout generally when he says that the disease is due to faulty metabolism giving rise to an auto-intoxication. He goes on to say: 'This auto-intoxication coincides with, or is followed by, in the majority of cases, a deposition of sodium biurate in certain of the joints or tissues, which constitutes the climax of the gouty attack. I cannot but think that with our increasing knowledge and experience of the disease, uric acid and its salts will, in all probability, have to be relegated to a position of subsidiary importance in the pathogenesis of gout. The joint manifestations are probably dependent upon much more general and much larger conditions than a mere excess of uric acid in the blood. The deposition of sodium biurate is possibly merely the sign of the disease, not the essence of it.'

Now, if we admit the auto-intoxication—and there is no escaping it—the connection between gout and kidney disease seems simple enough. And not only the connection between gout and kidney disease, but the connection between gout, kidney disease, and arterio-sclerosis. And this is how the matter would

seem to stand: the toxin circulating in the blood has, as one of its results, the irritation possibly of the vaso-motor centres, but almost certainly of the bloodvessels along which it passes. The effect upon these blood-vessels is to cause their contraction, and when the contraction is continued for a long period of time, the vessels become sclerosed.

Now, this poison is normally excreted by the kidneys, so that it is projected on to these organs not only in a concentrated form, but with 'nozzle velocity.' If the initial power of resistance in these organs is weak, the renal vessels quickly sclerose, and the sclerotic process spreads, as it were, all over the viscus. Then arise the phenomena with which all are familiar—the increased blood-pressure, the enlarged left ventricle, and the consequent progressive arterio-sclerosis over the whole body.

This is easy to understand, and is very generally realized. What seems to me to require insisting upon is that this process is frequently reversed, in the sense that the arterio-sclerosis, instead of beginning in the kidneys, may originate elsewhere and spread to these organs, so that the granular nephritis, instead of being the first stage, figures either as an accident or as the final event in the morbid process. For the process, like all other morbid processes, will begin at the site of least resistance, and this site will vary with the individual, so that if the renal vessels are not primarily below par there is no special reason why they should be first affected. And, as a matter of fact, they very

seldom are, and I am convinced that a great number of the cases of granular kidney and general arterio-sclerosis might be checked if sufficient regard were paid to the detection of the earlier manifestations of arterio-sclerosis in other parts.

Now, although we are for the moment dealing with the gouty poison, I must not be understood to suggest that this is the only form of toxin which may give rise to the phenomena we are about to consider. It is, on the contrary, well recognised that the poisons of lead, tobacco, syphilis, typhoid, acute rheumatism, scarlatina, and other acute specifics, frequently carry arterio-sclerosis in their train; and that worry, anxiety, and concentrated brain-work are very liable to produce it. But this I am prepared to affirm —that by far the commonest cause is to be found in those dietetic and other errors, such as excess of flesh foods, alcoholic drinks, and insufficient exercise, which all agree in associating with the production of the gouty state.

The French have an aphorism to the effect that 'gout is to the arteries what rheumatism is to the heart,' which means, of course, that arterio-sclerosis is as common an accompaniment of gout as endocarditis is of true rheumatism. The idea would, however, be better expressed in English by saying that 'goutiness' is to the arteries what rheumatism is to the heart; for in acute gout the poison usually exhausts its virulence during the attacks, which consequently protect the sufferer from the symptoms of goutiness.

Now, if we bear this aphorism in mind it helps us in a great measure to understand that otherwise baffling element of ubiquity which characterizes the symptoms of goutiness, by teaching us to regard these symptoms as due primarily to some dereliction of duty on the part of the arteries in the immediate neighbourhood. Such an explanation does not, perhaps, cover all the facts; it serves, at any rate, to remind us of what in our search after the exact nature of the gouty poison we are sometimes in danger of forgetting—namely, that this poison has a particular affection for the arterial vascular system.

Let us now consider its *modus operandi*. We have already seen that the gouty poison causes contraction of the arteries. It is important to remember that this contraction is at first functional, and therefore curable, but that if it goes undetected and unremedied, it becomes organic, and therefore incurable. It becomes incurable in the ordinary acceptation of the term, but its effects may nevertheless be mitigated, and in the earlier stages even nullified, by suitable treatment. The functional, the curable, stage is called by the French the stage of presclerosis, and it is, of course, in this stage that it is desirable to recognise the condition, and to set about its treatment. For when once the stage of presclerosis is past and the stage of organic sclerosis is entered upon, the disease, though much easier to detect, is much more difficult to treat. Now, how are we to recognise this first stage—the stage

of pre-sclerosis? Well, it is by no means easy, and, as I have already said, in connection with goutiness generally, the first thing to remember is not to forget it. Because it must always be sought for; it never calls attention to itself by any very obtrusive symptoms, and the indications of its presence are very variable. The first effect of a general contraction of the branches of the arterial tree will be increased vigour of the heart's action. The cardiac muscle is stimulated by the resistance, which it seeks to overcome by slower and more forcible contractions. Now, if we keep these two facts in mind, the contraction of the vessels and the increased vigour of the heart's action, the phenomena to which they give rise, individually and collectively, are not difficult to follow.

First of all, then, with the contracted arterioles we find pallor of the surface, more especially of the face, cramps and numbness, together with coldness of the legs and feet, and fingers that 'go dead,' slight giddiness, and momentary mental confusion, which are very liable to be mistaken for attacks of petit-mal, which may, indeed, degenerate into such attacks unless their true origin is recognised and treated. Further, there may be mental lethargy, and, although the patient sleeps badly, he is always drowsy. Epistaxis, conjunctival and other hæmorrhages are common. There is also disinclination for work, especially pronounced in the morning. Another effect, referable to the nervous system, is the pro-

duction of neuralgias of various sorts; persistent or recurrent neuralgia, or headache, is very suggestive of high arterial tension. Someone has said that neuralgia is the cry of a nerve for healthy blood, so that if the arterioles which supply a particular nerve contain impure blood, and by reason of their contraction are able to deliver such blood in reduced quantities only, it is not surprising that the nerve should become painful. The facial and sciatic are those most frequently involved.

The effect of the vascular contraction in the bowels is, as one would suppose, the production of constipation, and in the kidneys, polyuria. These symptoms are fairly constant, more especially the polyuria. The contraction in the systemic periphery naturally causes plethora in the pulmonary periphery, and thus we find dyspnœa to be prominent, an important and a highly characteristic symptom. This dyspnœa, the dyspnœa of slight effort, must not be confused with the asthma which is so liable to supervene in the later stages of the affection. This dyspnœa, even when extreme, never has the characteristic laborious expiration of asthma, but resembles far more closely the panting of renal air-hunger, which one so often sees in the last stages of a chronic nephritis. It is provoked by very slight exertion, it is often accompanied by a vague feeling of uneasiness in the chest, or by palpitation, and is liable to occur at night, without obvious cause. This symptom derives its importance partly from the fact

that it is the one which usually brings the patient under observation, and largely from its liability to be confused with the dyspnœa and palpitation of ordinary dyspepsia.

The complaint of dyspnœa would naturally lead every conscientious practitioner to an examination of the cardio-vascular system, and no examination of the cardio-vascular system is even partially satisfactory which fails to include a careful instrumental estimate of the blood-pressure. In previous editions of this book it seemed necessary to insist that digital estimation of the 'arterial tension,' as it used to be called, was altogether fallacious. The opinion of the profession has fortunately moved rapidly in this direction, and they are few indeed who do not now realize the importance of the use of a reliable instrument. It is long since Clifford Allbutt pronounced the final word on the subject by saying that to appreciate variations from the normal blood-pressure it is just as necessary to use a mechanical appliance as it is necessary to use a thermometer for the accurate appreciation of temperatures. There are a great number of very reliable instruments on the market. The best for the consulting-room is probably one of the many modifications of Riva Rocci's mercurial instrument. Dr. George Oliver's alcoholic instrument is also convenient and reliable. For family practice the best, because it is the most portable, is undoubtedly Dr. Rogers' Tycos manometer. It has, however, the disadvantage of being more than double the price of the others.

The normal systolic blood-pressure in a young and healthy male adult may be taken as 120 mm. Hg. In women it is rather lower, say 110 mm. Hg; in children lower still, say 90 to 100 mm. Hg. This pressure tends to rise with advancing years. At fifty years of age it may be 150 mm. Hg without exciting alarm; at sixty a pressure of 160 mm. Hg is not abnormal; and from seventy years onward it may be 200 mm. Hg with apparent impunity. Nevertheless, a pressure of 200 mm. Hg, even in the aged, must always be regarded with a measure of anxiety, and in those under seventy years it presents a danger-signal which ought not to be disregarded.

And here let me once more emphasize the fact that high blood-pressure does not necessarily indicate renal disease. In many cases, if not in most, the first event is the high pressure, which, if undetected and unchecked, leads to arterial disease. The particular region in which the arterial disease may reveal itself it is impossible to predict, but the end is just as liable to come with a cerebral hæmorrhage as with a contracting granular kidney.

Now, how is this high blood-pressure to be lessened? Obviously, by removing the poison which provokes it, and by taking such steps as will insure the permanent reduction of its manufacture in the system. Into the general principles which should guide us in these matters I have already entered in some detail, but I may briefly recapitulate those which

have a special bearing upon the question under consideration.

First, then, as to diet, without careful attention to which it is quite hopeless to attempt the treatment of high arterial tension of gouty origin. The embargo upon meat foods must be absolute; and under meat foods, let it be clearly understood, are included fish, poultry, and game. Alcoholic drinks, tea, and coffee must also be absolutely forbidden. The patient must be encouraged to drink plenty of milk, and to take fruits and vegetables freely. What I have said about the great importance of taking plenty of fluid in the gouty state generally must be accepted with considerable reservation in the case of high arterial tension. If the excretion of the extra fluid can be insured, then the extra fluid can do nothing but good. If, on the other hand, an appreciable portion of it remains, then, by increasing the actual quantity of blood in the vessels, and by thus adding to the state of tension, it is liable to do harm. For this reason, a flushing policy, though excellent when it succeeds, should in the first instance, at any rate, be undertaken with caution. The emunctories must, nevertheless, all be urged to do their part in ridding the system of the gouty poison, and the purgatives, diuretics, and sudorifics already referred to must be pressed into the service.

So far as purgatives are concerned, nothing can compare with mercury, and for a diuretic it is as well to use that which has been so highly spoken of by

Professor Huchard, to whose teaching we owe almost all our knowledge of the pre-sclerotic state—namely, theobromine (see p. 205). The waters of Evian, Contrexéville, and Vittel are admirable aids to all diuretic drugs, and would seem, especially the first named, to possess a special value in the condition we are discussing. The best means of stimulating the skin—that is, by warm baths and electric light baths—have already been referred to. Another excellent general measure—namely, massage—is capable of rendering yeoman service in states of high arterial tension, especially when applied to the abdomen; for it helps to dispel 'abdominal venosity,' and to pass the blood rapidly through the organs which are credited with being actively concerned in the manufacture of the gouty poison. This, which is mere recapitulation, refers to general measures, the importance of which should never be lost sight of.

We now come to the question of our ability to act directly upon the high blood-pressure and to reduce it by means medicinal or otherwise. Do such means exist? Well, they do, but none of them are satisfactory; for the reason that their action is very transient, and their continued employment is by no means unattended with danger. First among them stands blood-letting. Where we find ourselves in an emergency, face to face with a threatening of cerebral hæmorrhage or an anginal attack, no one would, I presume, hesitate to abstract blood from the arm to the extent of half a pint or more. But it is obvious

that this is a process which cannot be often repeated, and, as the high arterial tension depends less upon the quantity of the blood than upon the state of the vessel wall, it is useless to reduce the one (especially as the reduction cannot be maintained) without influencing the other.

And a similar objection applies to the drugs hitherto introduced for this purpose. Nitrite of amyl, though entirely trustworthy in emergencies, is incapable of prolonged action. Trinitrin is in reality only a degree better. It takes longer to act than nitrite of amyl, and its effect is maintained for a longer period; but the relief it gives is ill-sustained, and it cannot be frequently repeated. The same objection applies to erythrol tetranitrate (1 grain in tablets three times daily), though to a much less extent. Thyroid extract seems to act beneficially in a good many cases, and where tachycardia is not yet present it may be tried with considerable confidence. In the high arterial tension which is so common with women at the menopause some observers claim to have had good results with ovarian extract. The physiological basis for its employment is certainly sound, and if it does no good, it can do no harm. Aconite has been recommended by some people, and chloral extolled by others. The employment of both these drugs is, however, fraught with such obvious drawbacks that it is scarcely necessary to consider them.

In the way of drugs, then, there is nothing upon which we can, in the present state of our knowledge,

depend for a definite and sustained action of a specific nature, without incurring risks which it does not seem to me that we are justified in taking. And this is perhaps all to the good; for if we had such a drug we might be tempted to use it to the exclusion of those general principles of diet and hygiene on which the successful management of the gouty diathesis is known to depend, and on which, especially when combined with the judicious employment of mercury and iodide of potassium, full reliance may always be placed.

It must not be concluded from the foregoing that an abnormally high blood-pressure is of necessity so evil a thing that, when discovered, all our efforts must be directed to its immediate reduction. So far is this from being the case that a rapid reduction of arterial pressure, as by means of nitrite of amyl, may very easily be attended by fatal results. We have to remember that the arterial pressure must always be higher than the venous pressure. If it is not, the medulla is starved, and the patient dies. If, therefore, the venous pressure is unduly high (as, for example, in mitral stenosis), there must be a coincident and corresponding rise in the arterial pressure, and the manometer will register a very high figure. The indication here is to reduce, not the pressure in the arteries, but that in the veins. To attempt the former is to interfere with Nature's dispositions for the continuance of life.

The same considerations apply when the arterial

pressure rises in response to an augmented intracranial pressure. In order to secure that the blood shall reach the medulla in spite of the obstacle thus provided, the blood-pressure in the arteries is increased commensurately with the increase of pressure inside the cranium. Here again the manometer will show a very high reading; but if we allow ourselves to be beguiled into reducing the arterial pressure by venesection or other means, we shall surely place the patient in imminent danger of his life. It is essential to remember that high blood-pressure is not a disease *per se*, and although in many cases—the majority, perhaps—it is very desirable that it should be reduced, there are nevertheless others in which its thoughtless reduction would certainly be attended by very serious consequences.[1]

But if it be true that high blood-pressure is in the minds of many ineradicably associated with renal disease, it is even more strikingly the fact that albuminuria is still regarded by many more as a condition so desperate as to require an undertaker rather than a physician. Inasmuch as this attitude creates a great deal of unnecessary alarm and inflicts great injustices, it seems profitable to consider the question here.

The most convenient method of dealing with the

[1] See 'The Vagaries of Blood-Pressure' (*The Hospital*, June 22, 1907); and 'Blood-Pressure and the Nervous System' (*Clinical Journal*, October 2, 1907). Also article 'Blood Pressure' in Murphy's 'Practitioner's Encyclopædia of Medicine.'

subject would seem to be briefly to review the physiological aspect of the matter, and see what light is to be obtained therefrom.

We have it on the authority of Virchow, Martin, Hofmeister, and others that albuminuria is the rule with new-born babies. The amount of albumin is at first abundant, but diminishes gradually, until by the fourteenth day it has completely disappeared.

Adolescents, who are apparently in good health, are subject to what is described as cyclical or postural albuminuria, a phenomenon which is now admitted on all hands to be devoid of pathological significance. Amongst adults of mature age, military men and doctors, Leube and Furbringer have described a considerable number of cases of this postural or cyclical albuminuria, unaccompanied and unfollowed by any morbid tendency.

Adolescents, who are undoubtedly in good health, very easily develop albuminuria as the result of fatigue. This has been conclusively shown by W. Collier, of Oxford,[1] who examined young men in training for races, men who may therefore be assumed to have been in a high state of physical and physiological efficiency. In a very large percentage (from 57 to 100) of these young men albumin appeared in the urine a short time after hard exercise, to disappear again after a period of repose.

According to Playfair,[2] albuminuria occurs in 20 per

[1] *British Medical Journal*, January 5, 1907, p. 4.

[2] 'Handbook of Midwifery,' 2nd edition, vol. i., p. 222.

cent. of pregnant women after the third month, and in a much larger percentage of primiparæ. Some of these cases, it is true, progress to definite renal disease, but the vast majority suffer no inconvenience from the occurrence of the symptom.

Finally, there is Senator's statement to the effect that every urine will be found to contain albumin if sufficiently concentrated.

The foregoing are, all of them, admittedly physiological conditions, the significance of which it is necessary to explain if we would realize the meaning of albuminuria as it occurs in conditions which are not physiological. Now, it is universally conceded that albuminuria may be caused by a congested state of the renal vessels, a fact with which we are all familiar in heart disease and similar conditions. Perhaps the most striking instance is afforded by the albuminuria due to injuries of the spinal cord, in which the vaso-motor nerves are paralyzed. But lesser degrees of congestion will produce the same results. Chills to the surface, for instance, as after cold bathing, especially in the sea, are known to provoke the appearance of albumin in the urine, presumably by increasing the amount of blood in the splanchnic area, and thus inducing a transient renal stasis. Let us see what bearing this has upon the physiological albuminurias just mentioned.

The newly-born infant is but partially adapted to the new conditions to which he is suddenly subjected. Most of the powers which he subsequently develops

are in a very embryonic state. More especially is this true of the co-ordinating or controlling power. He can, for instance, use muscles, but he has not learned to co-ordinate them. His sphincters act, but he is unable to control them. These powers are developed only by degrees and by training. We must, I think, assume the same to be the case in a much higher degree with the complicated mechanism of vaso-motor co-ordination and control. The blushing and pallor which occur involuntarily on any slight emotion, even at a very much later period, are sufficient to show that this mechanism is an exceedingly delicate one, which demands a considerable amount of training and adjustment before it can be considered to be in good working order. When a baby comes into the world he leaves a warm and equable climate for one which is cold and liable to considerable variations. However carefully he may be protected from such influences, they are bound to reach him, to the extent, at any rate, of causing very decided differences in the balance of blood distribution to which he has hitherto been accustomed. His skin is now, for the first time, called upon to contract, and this contraction causes the blood to seek refuge in the organs of the splanchnic area. The vessels in this area have not yet learned how to behave in the presence of such an influx, and the organs suffer a certain degree of congestion. The renal vessels are among those affected, and an albuminuria results. After a few days the splanchnic vessels learn their

lesson, the congestion is gradually reduced, and the albuminuria disappears.

The case of the adolescent is not very different from that of the new-born baby. As the boy is being transformed into the man, and the girl into the woman, new activities are developed, which place an enormous strain upon the delicate vaso-motor mechanism, which tends, in consequence, to fail. Failure of this mechanism is almost invariably in one direction—in that, namely, of undue vaso-dilation. The calls upon the nervous system are so considerable and so pressing that the tone of the peripheral arteries is not adequately maintained, with the result which always ensues in such circumstances, namely, that during the erect posture the blood collects in the capacious vessels of the splanchnic area. Then ensues a congestion in the renal vessels, with consequent albuminuria. So long as the patient is recumbent the blood does not tarry unduly in the splanchnic area; there is no renal congestion and no albuminuria. No sooner, however, is the erect posture assumed than the albumin reappears. The fact that in some of these cases the albumin diminishes or disappears towards the end of the day only signifies that by that time the vaso-motor mechanism has been provoked into a sense of its responsibilities, and has realized the necessity for contracting the splanchnic vessels in response to the change of posture. This postural or cyclical albuminuria is quite common in people who have been obliged to keep their beds for

a considerable time for some such cause as a fractured leg. In them the vaso-motor response atrophies from disuse, so to speak, and has to be re-educated as the erect posture is resumed.

As an instance of what is liable to happen to an adolescent who exhibits the phenomenon of postural albuminuria, let me briefly relate the case of a young man, aged twenty-three years, whom I first saw some years ago. Eighteen months previously, after he had been working hard at the University for his degree, he tried to insure his life, but was refused. This naturally alarmed him, and he consulted his doctor. The latter found that his urine contained no less than 40 per cent. albumin, told him that he had Bright's disease, and ordered him to Cannes for the winter. I may say parenthetically that if the patient had really had nephritis, the Riviera, with its abrupt variations of temperature, was about as bad a place as could possibly have been selected for him. However, to the Riviera he went, and returned home no better. His doctor then sent him to bed, and put him on a diet consisting only of milk. In about a week the albumin had completely disappeared, whereupon he was allowed up again. In two days the albumin had reappeared, but in reduced quantities, and he was sent back to bed. Again the albumin disappeared, to reappear as soon as he was allowed to get up. My notes do not say exactly how long this game of battledore and shuttlecock continued, but eventually the patient wearied of it. Having, in con-

sultation with his friends, decided that appendicitis could be the only explanation of the mystery, he came up to town to consult a surgeon, through whose instrumentality he eventually came to me, still, curious to relate, wearing his appendix intact. He was also wearing three or four layers of thick woollen undergarments, his skin was relaxed and sodden, his blood-pressure was 85 mm. Hg, his urine scanty and loaded with albumin. The most careful examination failed, however, to reveal any evidence of organic disease, so, when I had satisfied myself as to the absence of albumin after a few days in bed, and the absence of granular casts at all times, I instructed him how to clothe himself. I sent him to Margate with some strychnine and calcium chloride, and told him to pull himself together and live hard. Being anxious to get well, he did as he was told, and is now working hard, taking plenty of exercise and feeling perfectly well. He has learned how to test for albumin, and he tells me that, except after a dance or a hard set at tennis, his urine is now quite free from it.

The albuminuria of young athletes described by Collier, and previously by Dunhill[1] of Melbourne, is not quite so easy of explanation as the foregoing. It is nevertheless safe to assert that it is purely vaso-motor in origin. The train of events is probably somewhat as follows: We know that during muscular exercise the general blood-pressure is raised. The heart increases the number of its systoles, the vessels

[1] *Intercolonial Medical Journal of Australasia*, July 20 1902.

in the splanchnic area are contracted, while those which supply the muscles actually in use are dilated. After the exercise is over there is a reaction, which varies in degree directly with the magnitude and duration of the effort. After severe and prolonged exertion, therefore, the splanchnics dilate, and the n uscular vessels tend to contract. If this contraction is hastened, as it generally is in young men at Universities and public schools, and as it was in all Dunhill's[1] cases, by a cold shower or plunge, the blood is driven inwards with such rapidity that a renal congestion is produced, and albuminuria results. It is probable, however, that, apart altogether from the cold shower, the reaction from the conditions which necessarily obtain during active exercise are sufficient to induce a renal stasis, more especially in young men in whom we have seen the vaso-motor response to be but partially educated. It seems, however, that this may not be the whole explanation, for not only is the composition of the blood materially altered by vigorous exertion, in that the waste products are largely augmented, but the sudden and considerable elevation of blood-pressure entailed by such exertion is of itself sufficient to provoke a transient albuminuria.

The presence of albumin in the urine of pregnant women after the third month is obviously mechanical. The enlarging uterus, even if it does not exercise direct pressure upon the renal veins, materially alters

[1] *British Medical Journal*, April 27, 1907, p. 1031.

the distribution of pressure in the splanchnic area, and if the normal compensatory mechanism is not in good working order, a stasis with consequent albuminuria is not difficult to imagine. It is a significant fact that such an albuminuria is more common in primiparæ.

We have, then, in albuminuria a symptom which may occur, and constantly does occur, in conditions which are purely physiological. We know, further, that it occurs in states which, though pathological in various degrees, are nevertheless not such as even to suggest that the kidneys are at fault. I have already mentioned cardiac disease and spinal injuries, but these by no means exhaust the conditions in which albumin is frequently, if not constantly, found in the urine. In pronounced myxœdema it is a classical and well-known finding, and it is also well known that the albumin rapidly disappears under thyroid treatment. It is by no means uncommon in minor degrees of thyroid insufficiency. In certain conditions, which are wrongly labelled obesity, which are nearly related to myxœdema, though quite distinct therefrom, as shown by the fact that thyroid extract has no beneficial influence upon them, albumin is often present in the urine in very large quantities, and disappears rapidly under suitable treatment. Albuminuria is very commonly present in chlorosis, in Graves' disease, in tonsillitis, even other than diphtheritic; in some forms of dyspepsia, and in almost all cases of hepatic congestion; in migraine, in epilepsy,

during the gouty paroxysm and in most toxic pyrexias. Among pulmonary conditions it is found as an early sign of tubercle. It is common in asthma, and by no means uncommon in the bronchitis of emphysematous patients. Moreover, a very large number of drugs will give rise to it; cubebs, copaiba, turpentine, mercury, morphia, quinine, arsenic, and phosphorus, are among the most important, but they by no means complete the list. Passing abnormalities anywhere in the urinary passages may provoke the symptom. An excess of oxalates in the urine will produce it; so will the irritation of small calculi or sand. A slight cystitis is by no means an uncommon cause, and an exceedingly common one is the presence of spermatozoa in the urethra. Altered blood states, as in the essential anæmias, almost always provoke albuminuria. Women, at or about the menopause, very frequently have an appreciable quantity of albumin in the urine, especially if this be examined at the time when an expected period has failed to appear. The combination of this with a certain rise of blood-pressure, which is very common at the climacteric, has frequently given rise to serious and alarming mistakes in diagnosis.

It seems scarcely credible that a symptom which is common to so many diverse conditions, both physiological and pathological, should have succeeded for so long in masquerading as necessarily connoting renal disease. And yet it is within the experience of all of us that people have been, and, alas! still are, refused

for life assurance and otherwise condemned as damaged individuals merely because, from some of the above-mentioned causes, a little albumin has been found in their urine. It would be just as logical—it would, indeed, be more reasonable—if dyspnœa were regarded as necessarily indicating pulmonary or cardiac disease. Dyspnœa is in many cases very significant of such disease, but inasmuch as we have all of us become very breathless hundreds of times in the course of our lives without any untoward effects, we have acquired some sense of perspective in the matter. It would be a good thing if the presence of albumin in the urine could be manifested by some sign equally gross and obtrusive. We should then come to realize how frequent an occurrence it is, and how seldom it indicates anything more serious than a passing change of pressure in the bloodvessels of the splanchnic area. Albuminuria, like dyspnœa, may be the expression of very grave and fatal diseases, but, like dyspnœa, it may also indicate nothing more serious than a considerable, though perfectly harmless, alteration in the distribution of blood-pressure. We all make it a rule to gauge the significance of dyspnœa by the causes which provoke it. No one would dream of shaking his head and crying 'heart disease' because a man was breathless after a mile race; but it cannot be said that no one could be found to shake his head and cry 'renal disease' because the same man produced albuminous urine after the same ordeal.

Very often, of course, the meaning of an albuminuria is sufficiently obvious. It is seldom, indeed, that we find ourselves in doubt about acute nephritis, or chronic tubal nephritis, or amyloid disease. In these cases and in gross tuberculous renal lesions, the coexisting symptoms are almost invariably such as to point unmistakably to the true source of the albumin. The cases which give rise to perplexity are those in which the albumin constitutes the only, or almost the only, symptom. In such cases one has no right to express anxiety, much less to pronounce a sentence of incurable disease, unless in addition to albumin the urine also contains definite evidence of structural disturbance in the kidneys. This ought to be an absolute rule which permits of no exceptions. Such evidence is afforded by the presence of epithelium, of blood, of tube casts, more especially of the granular or fatty variety. Hyaline casts, although they are suspicious, have not the same significance, for not only may they be found in small numbers in almost any urine if sought for with sufficient diligence, but they are often present in large numbers in nervous and febrile conditions which have no renal connection. It must be admitted, no doubt, that a specific gravity of less than 1015 is a suspicious factor, but inasmuch as nervous people very often have urine of low specific gravity, it affords no excuse for any relaxation of the above rule.

CHAPTER VI.

MINOR GLANDULAR INSUFFICIENCIES.

ALTHOUGH it is my intention to devote this chapter mainly to the consideration of thyroid insufficiency, it is well for the reader to understand that the interdependence of the endocrine glands renders it very difficult in the present state of our knowledge to be sure which particular gland is at fault. It is exceedingly likely that some of what we now take to be manifestations of thyroid insufficiency of slight degree, are in reality due to insufficiency of some other gland, partly opponent and partly complemental, such as the pituitary or the adrenal, which may be stimulated into increased activity by the exhibition of thyroid extract.

If we consider the symptoms which in the various monographs are confidently attributed to the failure of the particular gland in question, say the thyroid, the pituitary, or the adrenal, we cannot fail to be struck not only by the resemblance between many of these symptoms, but with their practical identity. With substates of the thyroid, for example, we are accustomed to associate adiposity, infantilism, sub-

normal temperatures and subjective frilosity, a slow pulse, somnolence and mental hebetude, together with hairlessness and dermic pigmentation. In substates of the pituitary we find that all these conditions are not only present, but are regarded as characteristic—if not pathognomonic. In the case of adrenal insufficiency, some of them, notably the infantilism, the low temperature, the hairlessness and pigmentation are prominent symptoms. It is therefore evident that when one member of the endocrine hierarchy is at fault, the mere disturbance of the glandular balance is sufficient to produce certain symptoms of which one can only affirm that they point to a disturbance somewhere in the endocrine system—the pluriglandular syndrome, as it is called. There are some indications, though, so far, they are not many, which enable us to say which gland is probably the primary offender. It is these which I now propose briefly to consider.

Confusion is most likely to arise between insufficiency of the thyroid and pituitary insufficiency. Adrenal inadequacy, though it may in its very early stages present some features which might lead to a mistaken diagnosis, is nevertheless as a rule sufficiently distinctive in its evolution. Here there is never adiposity; the change in bulk, if any, is always in the direction of emaciation. Moreover, however much the general symptoms, such as asthenia, frilosity, and depression, may suggest thyroid or pituitary insufficiency, the urgency of the gastro-

intestinal symptoms should prevent any mistake. These are anorexia, diarrhœa, and vomiting of a nature progressive and intractable, which are usually accompanied by pain and tachycardia. The diagnosis of adrenal insufficiency has been much assisted by Dr. Emile Sergent of Paris, who described the phenomenon of the 'white adrenal line.' This is his description:

'To bring about this phenomenon the skin of the abdomen is selected by preference and on it is traced a geometrical figure—a rectangle, triangle, or cross—thus obviating any possible confusion with lines possibly caused by scars, folds of the skin, etc. Ordinarily I outline a square around the umbilicus with a blunt object, as the rounded end of a fountain pen, or, simply, the finger tip, taking special care to avoid rubbing, particularly with the nail. The figure should be made by a simple superficial stroking—one must neither bear down nor scratch. The motion should be deliberate and never rapid. The early or premature appearance of an outline is always a sign of clumsiness, as such treatment strikes and surprises the vasomotors, thus interfering with the reaction instead of causing it. I am in the habit of telling my students that such a procedure is likely to be a source of error. When the tracing has been made properly, all movement on the part of the patient is prohibited and one waits a short time. Immediately following the outlining nothing is seen, provided the proper technique

has been followed; but after a few seconds, about half a minute, a pale line or band begins to be noticed following the course of the finger (or pen). Gradually this becomes more and more distinct and white, at the same time becoming larger, so that eventually the line exceeds in size the actual area touched by the finger tip.'

It is necessary to draw a distinction between adrenal insufficiency and Addison's disease. The tribute of the suprarenal glands to the blood-stream may become deficient from various causes. Addison's disease, which is due to tuberculosis of the glands—a tuberculosis which is always primary to those glands —is only one of the causes. Its original description was so vivid and the complete clinical picture which it presents is so striking, that it has tended to obscure the minor manifestations of the glandular difficulties; much as myxœdema in its complete form so long obscured the lesser degrees of thyroid insufficiency. Perhaps the most striking objective signs of adrenal insufficiency are to be found in the vascular system. The tone of the bloodvessels is below par, as evidenced not only by the manometer, but also by the instability of the pulse and the absence of reserve power in the heart itself. This, when accompanied by a subnormal temperature, as is usually the case, and somnolence with an over-readiness to fatigue, physical and mental, may easily give rise to a suspicion that the thyroid or pituitary is at fault, but, as I have already said, the

emaciation which is characteristic of suprarenal insufficiencies is not often seen in these others, and the gastro-intestinal troubles seldom or never. Difficulties may nevertheless arise when, as frequently happens, especially after acute specifics, two or more of the endocrine glands are simultaneously exhausted.

The resemblance between the phenomena of thyroid insufficiency and those of pituitary insufficiency is so close as often to require great care in arriving at a decision as to which of these two glands is really at fault. And here again it is necessary to remember that there is nothing to prevent a depression of activity in both of them simultaneously. Both are charged with the neutralization of toxins, endogenous and exogenous; both are essential to bodily growth and mental development; both are intimately concerned with the function of reproduction. The two are said by some to antagonize each other, and there is very definite evidence that in certain conditions the one will, so to speak, replace the other—or endeavour to do so. It is therefore not surprising that confusion should often arise as to which is the chief offender when symptoms point in the direction of either. It is of course true that no one with any experience is likely to mistake myxœdema for Hutchinson's syndrome,[1] but it is all too

[1] *I.e.*, dystrophia adiposo-genitalis, commonly called Froelich's syndrome. The condition was, however, first described by Jonathan Hutchinson in the *Archives of Surgery*, under the name of 'lipomatosis universalis asexualis,' and it ought in common justice to bear his name, if anyone's.

easy to be led into error in cases which fall short of their complete evolution towards these distinctive clinical pictures.

I have already said that in both there is adiposity subnormal temperature and subjective frilosity, a slow pulse, mental hebetude, together with hairlessness and dermic pigmentation. Such is the rule. It is by no means the rule, but it may occur in either, that adenoids and nocturnal enuresis appear in children and that transient swellings, psychic disturbances, and menstrual vagaries appear in adults. But if you will look beyond these resemblances you will find differences which are illuminating. To begin with, the adiposity in the two cases is different in type and distribution. In pituitary insufficiency it is, to use Hutchinson's expression, universal; whereas in the case of the thyroid it favours certain well defined regions. Moreover, in certain cases even of complete thyroidlessness, the patient shows no appreciable adiposity, a state of matters which I have never seen associated with any pronounced degree of pituitary depression.

The condition of the skin affords a striking contrast in the two cases. Where the thyroid is at fault, in degrees varying with the severity of the case, the skin is harsh, dry, and coarse, proceeding occasionally to the length of definite ichthyosis. Its minor manifestations favour certain regions, notably the the hands and the skin over the triceps. When the pituitary is the primary offender the skin is never

coarse. It may be dry; it often is, but it is always fine, and in many cases it seems almost atrophic. The difference in the two cases extends to the nails, which in the case of the thyroid are coarse and brittle; in the case of the pituitary they are small and thin, and are often unprovided with crescents at the roots. It is much the same with the hair. On the head, subthyroidic hair is ill-nourished and tends to fall; it may be dry or greasy, but the individual hairs are of good calibre. Subhypophyseal hair is always fine, almost baby-like in texture, and shows no great tendency to fall out.

Investigation of the eyes may afford valuable information. In the lids themselves there is often a sufficient deposit of ' mucoid ' tissue to give a heavy-eyed appearance to the subthyroidic; and in extreme cases both upper and lower lids may be so suggestive of the œdema of renal disease, as to deceive all but the most experienced. I have never met with anything of this kind in hypopituitarism. In this condition the ocular troubles, if any, are visual, and are due presumably to some circulatory disturbance in the neighbourhood of the pituitary itself. Hypopituitarism is often accompanied by an enlargement of the gland, just as hypothyroidism is frequently accompanied by a goitre. Hertoghe has described one case, and I have seen another, in which amblyopia was present in fully developed myxœdema; in both instances it cleared up under treatment by thyroid extract. Such a complication is, however, so rare

that it is safe to regard visual disturbance as a sign rather of pituitary deficiency than of thyroidal.

The enlargement of the gland which occurs in simple hypopituitarism is almost certainly the cause of the persistent headache, presenting exacerbations of extreme violence, which is a characteristic feature of the complaint. A very slight degree of enlargement is sufficient to cause pain within the closely packed cranium. The headache of hypothyroidism is a dull ache which is seldom insisted upon; but the headache of hypopituitarism is not infrequently the symptom whose urgency drives the patient to seek advice. In any case, it is one which is always put in the forefront of the indictment. Pituitary extract relieves it with astonishing rapidity. The effect of aspirin, pyramidon, and their congeners is often good, but always transient.

In thyroid deficiency the teeth usually show evidences of the disturbance of calcium metabolism. They decay rapidly in children, and in adults they tend to fall out. The calcium function of the pituitary is believed to be opposed to that of the thyroid. The latter is said to fix these salts in the body, the former to discharge them. We should therefore expect a deficiency of pituitary essence in the blood to lead to a retention of calcium salts. There are a great many facts which go to support this view, by no means the least striking among which is the excellent state of the teeth in most cases of hypopituitarism. This is a feature which has before now

guided me to a correct diagnosis when the other signs were ambiguous.

Although mental hebetude is a frequent accompaniment of pituitary insufficiency, it is very far from being characteristic. I would indeed go so far as to say that a bright intelligence is a conspicuous feature of uncomplicated pituitary insufficiency. It is usually a concomitant thyroidal defect which causes the hebetude.

Before leaving the subject of the pituitary, which I now propose to do, in order to concentrate attention upon the better understood thyroid, there is one matter upon which I desire to lay special stress. It is well recognised that the hypodermic administration of pituitary extract raises the blood-pressure. Great care is therefore necessary in applying this form of medication to those in whom the arterial tension is already too high. That is a precaution upon which it is quite right to insist. It should, however, be distinctly understood that this precaution is quite unnecessary when the extract is given by the mouth. When introduced by the oral route the powerful pressor substance is not absorbed; it is presumably destroyed in the stomach. I have now on several occasions made very careful observations on this point, as the result of which I can quite confidently affirm that pituitary extract administered by the mouth even in very large doses, has no appreciable effect upon the blood-pressure. This is an extremely important fact, which if it were genera ly

recognised would remove the timidity which now prevails about the exhibition of the drug to patients who are clearly in need of it.

Pituitary feeding is said to produce no toxic effects. Although, in a general way, I am disposed to agree with this, it has more than once occurred to me, owing to the absence of any other explanation, to saddle the treatment with the responsibility for occasional acute though transient rises of temperature which have occurred during its course. The only harm which these febrile movements appeared to do, was to occasion very considerable alarm to those in charge of the case.

Cushing points out that one of the characteristics of hypopituitarism being an abnormally high sugar tolerance, a fair gauge for the dose of pituitary extract required by a particular case is the degree to which this tolerance is reduced by the treatment. My experience has been that the necessary sugar tests are so much disliked by patients that I never now suggest them.

Minor degrees of thyroid insufficiency are at first very difficult of recognition. The observer's eye must be educated and his senses kept on the alert. In order to enable him to do this his attention must be called to the importance which may underlie the apparently trivial. It is this which I now propose to attempt.

That the thyroid secretion is essential to the development of the fœtus is shown by several facts. Myxœdematous women seldom become pregnant,

and when they do, in the absence of thyroid medication they invariably abort. It is normal for women during pregnancy to develop an enlargement of the thyroid gland, which subsides to some extent after the child is born, but is continued during lactation. By no means the least important function of the thyroid gland is that of fixing the calcium salts in the body. In order to permit of bone formation in the fœtus the mother is obliged to provide more secretion than under normal circumstances she requires, and the gland consequently hypertrophies. After the birth of the child, the same degree of this increment being no longer necessary, the gland tends to resume its normal proportions. In some women this prolonged call of pregnancy has the effect of unduly exhausting the gland, and they are unable in consequence to suckle the child, for lactation is dependent upon a due supply of thyroid secretion.[1] Such women generally become obese and lethargic, and remain so for varying periods until the thyroid has had time to recover itself. Judicious thyroid medication will frequently not only enable a mother to suckle her infant, but will materially shorten the period of her post-partum difficulties.

But to return to the child. Unsatisfactory babies are almost invariably the subjects of thyroid deficiency. Other dyscrasiæ may of course act as

[1] Hertoghe, 'Nouvelles Recherches sur les insuffisances thyroidiennes,' Bulletin de l'Académie Royale de Médecine de Belgique, vi. série, tome xxi., No. 4.

contributory causes, more especially the syphilitic and the tuberculous; but even of these it may be said that some, at any rate, of their effects are due to their depressing action on the thyroid. It has more than once occurred to me to succeed in transforming an unsatisfactory child into a satisfactory one by a combination of grey powder and thyroid extract, after having tried both separately with very partial success.

When we pass from the region of general unsatisfactoriness to demonstrable clinical entities, we are, at this period of life, immediately brought face to face with rickets. Now, with regard to rickets, I feel in a position positively to affirm that if all the symptoms of the disease are not due to thyroid insufficiency, then certainly its most salient features are. Especially does this apply to the bony phenomena which are the most obvious signs of the disease. These phenomena are obviously due to inadequate osseous development, and, as in the fœtus, so in the growing infant, thyroid secretion is essential to the full utilization of the calcium salts. It is known that the bony phenomena are due to a relative absence of calcium salts, and it is also known that these salts, given in large excess though they be, have no influence in arresting the disease. This is because the all-essential link is missing, the thyroid secretion, by whose means alone the ingested calcium can be so assimilated as to be incorporated in the osseous tissues. No originality is claimed for this

view as to the essential factor in rickets. It was first advanced by Professor Marfan in 1907,[1] and upheld in an interesting paper which does not appear to have attracted the attention which it deserves. My own experiences have convinced me that the view is correct. If it be true anywhere, as the adage has it, that *naturam morborum curationes ostendunt*, it is pre-eminently true in the sphere of opotherapy; and every case of rickets in which I have employed thyroid extract has shown such decided improvement as to leave no doubt in my mind that thyroid insufficiency is the main causative factor in the disease.

As a child progresses in years, deficiency in thyroid secretion may reveal itself in various ways. One of the most dramatic and alarming is the production of night terrors. I do not pretend to be able to explain the association between these unpleasant ebullitions and a deficiency of thyroid essence in the circulation, but I can most positively affirm that they rapidly disappear under the influence of thyroid extract. I have already shown that nocturnal enuresis,[2] though it may own other causes, such as phimosis or intestinal worms, is in the vast majority of cases caused by thyroid inadequacy and is readily curable by the administration of thyroid extract. In the

[1] 'Le Rachitisme dans ses rapports avec la déformation ogivale de la voute palatine,' etc., *La Semaine Médicale*, September 18, 1907.

[2] 'Adenoids, Nocturnal Enuresis, and the Thyroid Gland' (Bale, Sons and Danielsson, Ltd., 1909).

same connection I discussed the question of adenoids, and made so bold as to suggest, concerning them, that they constituted one of the stigmata of thyroid insufficiency. The views expressed may be briefly summarized as follows: Adenoids and enlarged tonsils occur in children who have an inadequate supply of thyroid secretion. The hypertrophic condition in each case is apparently the result of an endeavour on the part of the organism to supply an internal secretion as nearly allied as possible to the one which is lacking. If the hypertrophy is not very pronounced, and if it has been not very long in existence, great enough and protracted enough, that is, to produce complications, such as disease in the tonsils themselves or in the ears, then the exhibition of thyroid extract will cause their regression. It is only when medicinal means have failed that operative interference becomes justifiable.

Enlarged lymphatic glands, so often observed in the necks of weakly children, are not infrequently due to thyroid inadequacy. Whatever their position and accompaniments, they are usually quite confidently attributed to tubercle, and are treated as such with more or less indifferent success. Arthur Latham has recently pointed out that even where their origin is undoubtedly tuberculous, there is no justification for removing them until other means have failed. But these glandular enlargements are less often due to tubercle than is commonly supposed. I have seen a good many children thus afflicted to whom I

was emboldened to administer thyroid extract by the presence of some unmistakable coexisting sign of thyroid insufficiency. The enlarged glands in these cases have always been situated at the angle of the jaw; they have been hard and not tender, and have shown no tendency to suppurate. In this matter it is necessary to be quite sure of our ground before administering thyroid extract, because if the case be really tubercular the extract, instead of doing good, may very easily do harm. For some reason, which is so far unexplained, the majority of tuberculous people bear thyroid badly. In connection with this matter of enlarged lymphatic glands, it is interesting to note that Dr. John Orr, of Edinburgh, has had good results with thyroid extract in Hodgkin's disease.[1]

In tracing up to this point in its development the difficulties which may beset a child with an inadequate thyroid gland, it has not been necessary to draw any distinction between the sexes. They appear to be equally affected. When we reach the age of puberty, however, we find that the boys have practically disappeared. There are, it is true, some few cases of delayed puberty—infantilism—most of which yield readily to thyroid extract, and there are also the cases of adolescent albuminuria which also yield readily to the same treatment; they are clearly a matter of calcium metabolism; but in the vast majority of boys and young men the changes which

[1] *Folia Therapeutica*, July, 1909.

occur at this period appear to evoke such an activity of the thyroid gland as to protect them during the immediately ensuing decade from any evidences of thyroid inadequacy, always excepting those bony deformities which a previous insufficiency has stamped upon them. In the case of girls it is far otherwise. With them, it is precisely at the age of puberty that the worst of their troubles begin. But before separating the sexes I must make a generalization which refers equally to both. I stated at the outset that the prolonged call which pregnancy makes upon the thyroid gland frequently resulted in its exhaustion. The same thing must be said of the infectious diseases generally, more especially of those which are called the infantile diseases—mumps, measles, German measles, and scarlatina. It is evident that the internal secretion of the thyroid constitutes one of the defences of the organism against microbic invasion, for not only are subthyroidic children more liable to such invasion, but the occurrence of one of these diseases in a previously healthy child very often proves the starting-point of troubles due to thyroid inadequacy. The resistance to the effects of the poison makes a heavy demand upon the activity of the gland, and when the demand is over the gland becomes exhausted and its function depressed. A very large percentage of cases of rickets, adenoids, and nocturnal enuresis will be found on inquiry to date from one of the infantile febrile diseases. In connection with this aspect of

the matter it is convenient to call attention to the very depressing effect which real influenza at all ages is liable to exercise upon the functions of the thyroid. I say real influenza in contradistinction to the transitory febrile attacks which are diplomatically so labelled to satisfy importunate relatives who thirst after a label. Real influenza, as is well known, produces a degree of subsequent mental and physical asthenia which defies the ordinary tonics and remains obdurate to everything except time. Such, at any rate, was my experience until, on the theory of thyroid exhaustion, I began treating these cases with thyroid extract. The results of this treatment have always been gratifying, and I have no hesitation in affirming that if we were to realize more fully the exhausting effects upon the thyroid, and indeed of the endocrine system generally, of all acute specifics, we should be much more successful in dealing with the period of convalescence, which, to some natures, is even more trying than the disease itself.

This defensive power of the thyroid secretion is one which deserves to be emphasized. When it has attracted the general attention which it certainly merits, we may look for good results from the exhibition of thyroid extract during the course of all acute specific diseases. It should be remembered that, if it be sought for, an enlargement with tenderness of the thyroid will be found to be present in a large number of febrile diseases, notably in acute

rheumatism. The headache which is so often present in such cases may reasonably be attributed to the pituitary, and the asthenia to the suprarenals.

Let us now return to our chronological order, and proceed to consider the troubles imposed by thyroid inadequacy as the years advance. We had arrived at the age of puberty, at and after which boys may be dismissed as affording an interest which is but occasional and fortuitous. Of girls it is a truism to say that the establishment of the menstrual function constitutes a crisis no less critical than that which occurs at the menopause; but it is insufficiently realized that at both periods the pivot round which the critical phenomena revolve is the behaviour of the thyroid gland. That there is a certain physiological antagonism between the internal secretion of the ovary and that of the thyroid is well established,[1] and the observed facts go far to prove that the activity of the ovary normally provokes a corresponding activity on the part of the thyroid. The clinical evidence of this is provided by the enlargement of the thyroid, which is to be observed in the majority of women at each menstrual period. It is obvious then that, given a girl with a congenitally inadequate thyroid, the advent of menstruation will serve to emphasize that inadequacy, and thus bring into view various symptoms which up to that time

[1] 'Cardiopathies of the Menopause,' *Clinical Journal*, March 3, 1909.

had lain dormant. One of my cases of nocturnal enuresis[1] was certainly due to this cause. Without going much more fully into the matter than my present purpose permits, it would be impossible to offer an explanation of a clinical fact, of which anyone may easily convince himself—namely, that both dysmenorrhœa and menorrhagia are more frequently than not due to an insufficiency of thyroid secretion. Persistent amenorrhœa, whether it be congenital or acquired, is almost always due to hypopituitarism, and can generally be cured by pituitary feeding.[2]

That simple enlargements of the thyroid are due to an insufficiency of the internal secretion of the gland is now generally admitted.[3] That migrainous attacks, more especially such as affect by preference the menstrual period, are due to the same underlying cause, is a proposition which originated with Leopold Levi and H. de Rothschild,[4] and has been supported by numerous subsequent observations by these authors, and by others. Of dysmenorrhœa and menorrhagia enough has already been said. To this list of the disabilities which an inadequate thyroid may impose upon the female sex I would add one more—namely, sterility. From the fact that the thyroid enlarges during pregnancy, it may be taken

[1] 'Adenoids, Nocturnal Enuresis, and the Thyroid Gland,' p. 27.

[2] 'The Byways of Thyroid Inadequacy,' *American Medicine*, April, 1914.

[3] 'Organotherapy,' by H. Batty Shaw (Cassell and Co.).

[4] Hertoghe, *op. cit.*

as certain that the maternal economy requires an additional amount of the internal secretion during that period, and it is evident that if this additional quantity be not forthcoming, the pregnancy will be brought to an abrupt termination. In the case of women whose thyroid activities are markedly inadequate, this unhappy result will occur as soon as the first strain is put upon the gland—that is, when the next menstrual period is due. Many women who are labelled as hopelessly sterile are so only because of the general failure to recognise the paramount importance of the thyroid gland in the function of reproduction. I have known at least one case in which the repeated abortions were confidently attributed to syphilis, in which, nevertheless, the administration of thyroid extract brought a pregnancy to a most satisfactory conclusion. Where thyroid feeding alone is ineffectual, it is well to associate it with pituitary feeding. The addition of suprarenal feeding may even be necessary.

So fascinating and, in a sense, so facile is the diagnosis of thyroid insufficiency that it threatens soon to supplant gout in the position so long held by the latter as the last resort of the perplexed practitioner. When you have been fortunate enough to produce strikingly good results by prescribing thyroid extract, you are tempted to attribute a great many ills to thyroid insufficiency which have no necessary connection therewith. To this mental attitude must be attributed the tendency of the

moment, which is most apparent in France, towards blaming the inadequate thyroid for many mutually exclusive diseases. From the already formidable list of maladies for which the responsibility has been cast upon the thyroid, two seem to deserve more than a passing notice; one of these is rheumatoid arthritis, the other is chorea. Now, neither rheumatoid arthritis nor chorea is, to coin an expression, a self-contained disease; each of them represents a group of symptoms which may be produced by several different causes. In both, thyroid inadequacy may occasionally play a leading part, but either may occur in patients who do not show, nor ever have shown, the slightest sign of insufficient action of the gland. It has fallen to my lot to produce very brilliant results with thyroid medication in both these conditions, but in the majority of the cases so treated the results have been negative. In these diseases and many others it is to be presumed that an insufficiency of thyroid secretion provides a soil which is favourable to the unhindered action of the toxins, and that consequently the rectifying of the inadequacy will do much to protect the individual against invasion, though it can seldom ameliorate matters quickly enough and profoundly enough to influence the results of an invasion which has already succeeded. Chorea is often very favourably influenced by thyroid extract, but only in those who are definitely subthyroidic. In those who present none of the ordinary stigmata of thyroid

inadequacy, the extract does not succeed. Rheumatoid arthritis may be due to many causes, of which pyorrhœa, tubercle, and thyroid or other internal glandular inadequacy are only some. The commonest and the most potent is a toxæmia of intestinal origin. If the stigmata of thyroid insufficiency are apparent in any individual case, thyroid extract will probably give good results, but even then only when combined with other accredited measures, directed to the removal of the causative toxæmia.

Women who have been perfectly healthy all their lives very often display a marked tendency to thyroid insufficiency about the time of the menopause. It is not only the reproductive organs proper which resign their functions at this period. A great many glands which are, in a manner which is still obscure, related to these organs, tend to become concomitantly deranged, and chief among them is the thyroid gland. The changes incidental to the menopause often begin much earlier than is commonly supposed to be the case. In this country we are taught to expect them about fifty years of age. In France the recognised age is forty. But the age varies not only with race and climate, but also with the individual, and it is far from unusual to find both spinsters and those married women who have begun childbearing at a comparatively early age, exhibiting very distinct evidences of the approaching climacteric as early as thirty-five years. Of such evidences a great many

will be found to be very closely related to thyroid inadequacy, and a very considerable improvement, both subjective and objective, may usually be brought about by judicious thyroid medication. True myxœdema in my experience more often owns the climacteric as its cause than any other factor or combination of factors.

For reasons less obvious and in a manner less dramatic than the menopause, the conditions surrounding the mere advance of years tend to produce inadequacy of the thyroid function. It is not that the thyroid gland declines more rapidly than the other internal secretory glands, for all of them, even including the spleen, tend to diminish both in size and activity as the years advance. It is that the thyroid gland is so important to the economy that any diminution in its activities reflects itself unmistakably in a great many directions. So much is this the case that one foreign writer contends that if the activities of the thyroid could be maintained unimpaired the condition of old age could never arise. It is not necessary to subscribe to such an extreme view in order to appreciate the value of suitable doses of thyroid extract in most of the troubles which are liable to beset the senile period. There are very few of these troubles whose treatment by the recognised means is not rendered more rapidly successful by the addition of thyroid extract.

I now pass to the consideration of some of the signs and symptoms from which we obtain confirma-

tory evidence when the existence of thyroid inadequacy is in question. Some of these I have already noticed in considerable detail,[1] and I need not therefore do more than enumerate them. Among the most important is the subnormal temperature, which is usually a marked feature, and is not only revealed by the thermometer but is also complained of by the patient, who protests that she never feels warm. The eyebrow sign (*signe de sourcil*), first described by Hertoghe, consists in a rarefaction, amounting sometimes to complete absence, of the hair on the outer two-thirds of the eyebrow. This sign, when present, is certainly very suggestive, but in my own experience very perfect eyebrows are compatible with a marked degree of thyroid inadequacy, more especially when this has been provoked, as by an acute specific, after the patient has attained to maturity. Carious and irregular teeth should always excite suspicion. So, likewise, should delay in the eruption of the permanent teeth.

The most important among the signs which reveal a persistent deficiency of thyroid secretion are those which refer to the skin and its appendages. Amongst these, that which is most easily observed is the eyebrow sign just described. Premature greyness is generally, though not always, a sign of thyroid inadequacy. The same may be said of premature baldness of a pronounced kind. Both these degenerations are so common in comparatively young people

[1] 'Adenoids, Nocturnal Enuresis, and the Thyroid Gland.'

in this country that little diagnostic value is attached to them. They are nevertheless, both of them, very suggestive, and should always excite a suspicion either that the thyroid is not acting properly or that its functions have been gravely depressed in the past.

Abnormalities of cutaneous pigmentation are exceedingly common in all disturbances of the thyroid, whether such disturbances take the form of excess or perversion, as in Graves' disease, or of inadequacy, as manifested by myxœdema, rheumatoid arthritis, rickets, or climacteric disorders. The abnormalities in pigmentation which accompany such disturbances are not, as a rule, very obtrusive, nor, when present, must they be regarded as pathognomonic; but they afford valuable evidence in favour of suspicions otherwise aroused. Of these abnormalities, leucodermia is by far the most common. Amongst the grosser forms of skin lesion, that which is most frequently encountered in thyroid inadequacy affecting adults is certainly psoriasis, but eczema is almost equally common. Radcliffe Crocker[1] found thyroid extract exceedingly useful both in lupus vulgaris and ichthyosis. Urticaria, and transitory œdemas affecting the deeper structures, are concomitants of thyroid insufficiency to which Levi and de Rothschild attach very considerable importance. In cases of what we may call submyxœdema in adults, there is usually a slight deposit of myxœdematous tissue under the skin,

[1] 'Diseases of the Skin,' by Radcliffe Crocker, 1903.

and this is more noticeable in certain parts of the body. In such cases it will be found that although the skin of the hand and forearm can be pinched up with ease, that which overlies the deltoid and the upper part of the trapezius cannot be so pinched up. In women, the area immediately below the breasts often presents the same phenomenon. This condition has been called 'panniculitis,' an unfortunate name, though less unfortunate perhaps than the French 'cellulite.'

The so-called obesity of the subthyroidic is not a true obesity. True obesity is a caricature of the normal outline; hypothyroidic obesity is a caricature of true obesity. The deposit of tissue favours certain regions. Not infrequently there is a decided hump over the seventh cervical vertebra, so pronounced as to give to a patient who is really upright the appearance of stooping. This hump occasionally attains to the size of a closed fist. Its consistence is hard, giving a sensation to the fingers which is quite unlike that of ordinary fatty tissue. The region over the deltoids is often covered with the same material, and that over the triceps almost invariably. In some cases the breasts themselves remain relatively small, though even then they are apt to be hard; but the region immediately below them is generally covered by rolls of tissue which may easily be taken for true fat. In both men and women the walls of the abdomen are furnished with the same material, but in women the most noticeable deposit takes place in the gluteal region.

Subthyroidic people, like the fully myxœdematous, though voluble about irrelevant matters, often seem curiously reticent about themselves. Their brains move slowly and they are very forgetful. It is therefore necessary to interrogate them very closely on questions which are purely subjective. That they are unduly sensitive to cold, that they have considerable difficulty in concentrating the attention, that their memories are unreliable, especially in small matters, that they are very somnolent, especially at certain times of the day, are all facts which must be elicited by cross-examination. Fatigue, muscular and mental, is very characteristic of the condition. Although this element is very rarely absent from a case, the fact of its presence is never volunteered. This is due as a rule to its having been quite confidently and often brutally attributed to 'nerves,' 'fancies,' 'vapours,' or whatever the epithet of the moment may happen to have been, and the patient has been urged to rouse herself and take plenty of exercise. Needless to say, this is very bad advice, which not only causes a great deal of unnecessary suffering, but militates very decidedly against any tendency to improvement. Such patients demand physical and mental repose, and it should on no account be denied them.

THYROID MEDICATION.—Success in the treatment of disease by thyroid extract depends in the first place upon the employment of a reliable

preparation, and in the second upon a very careful supervision of the dose. In the matter of the former, my own experience is not very extensive. I have tried but four preparations, with all of which I have been satisfied. One is Messrs. Burroughs Wellcome's tabloids, another is Messrs. Oppenheimer's Palatinoids, the third is the Elixir Colloid of Messrs. Squire and Sons, of Oxford Street, and the fourth is a French preparation, the Thyratoxin of Byla and Co., of Gentilly. The disadvantage of the tabloids used to be that the minimum dose is ½ grain, which, as will appear later, I now regard as a large dose. This, however, is now remedied. The Palatinoids are made in doses of ¼ grain. The advantage of these two preparations is that they are portable and reliable. The French preparation is a solid one, in the form of 'tablettes.' The makers claim that they have eliminated the lipoids and leucomaines which are present in all ordinary preparations in such quantities as to give rise to symptoms which are regarded as those of physiological intolerance. It is certainly a fact that this preparation is very well borne by patients who seem unduly sensitive to those in more common use. One of the advantages of Messrs. Squire's Elixir is that the word 'thyroid' does not appear on the prescription. A very large number of patients or their friends have made unpleasant and even tragic acquaintance with the drug, and are consequently apt to take fright at the mere name of it. It is therefore con-

venient to be able to prescribe it under a different name. Another advantage is that one may vary the dose to any desired extent. The strength of the Elixir is 1½ grains to the fluid drachm, so that 5 minims represent ¼ grain, a dose with which I prefer to begin the treatment, even of severe cases. As it is very frequently desirable to associate other drugs with the thyroid, it is a convenience to include them in one mixture. The Elixir has no incompatibles. It is right to add that I have occasionally believed my results to be better with the solid preparations than with the liquid.

The dose of thyroid extract is quoted in most text-books at 3 to 10 grains, three times daily: a dose so large that it would be ludicrous were it not so dangerous. The proper dose is from one-tenth grain to 1 grain, three times daily. With the exception of certain types of lunatics, it is only the most robust among healthy people who can take larger doses with impunity, unless these larger doses have been arrived at progressively from very small beginnings. There is one important fact which the prescriber of thyroid extract should keep ever before him, which is, that the more a patient requires the drug, the smaller is the initial dose which he will tolerate. This is probably to be explained as follows: The want of thyroid essence has given rise to the deposit of mucin in various parts. Under the influence of thyroid medication this mucin is liberated into the circulation with a view of its excretion. If

it is liberated too rapidly, as by large doses it certainly is, there ensues such a surfeit in the blood that the excretory organs are unable to deal with it, and urgent symptoms of intolerance quickly arise. Professor Murray warns his readers against the exhibition of large doses in advanced cases of myxœdema, lest the degenerated myocardium fail under the strain and cause sudden death. The warning is much needed. And not only in advanced cases, for there are in reality very few cases of whatever degree of inadequacy which can tolerate without very grave disturbance an initial dose of more than ½ grain twice daily.

It is commonly stated that the symptoms of excessive dosage are tachycardia, palpitation, diarrhœa, vomiting, excitement, and even maniacal symptoms. These certainly do occur, but only in the case of a dose so grossly excessive that its administration by accident would afford its only excuse. If the drug be given with circumspection, the fact that the limit has been reached will reveal itself quite unmistakably long before any of the above symptoms have time to develop. A little looseness of the bowels there may be, but there ought to be nothing resembling real diarrhœa. A certain degree of quickening of the pulse-rate is to be expected, but if it amount to anything approaching heart-hurry, the management of the case has been very unskilful. To quicken mentality and promote alertness is one of the physio-

logical effects of the drug, but it argues ignorance or carelessness when these results are allowed to reach the stages of excitement and restlessness. If it is intended to give thyroid extract over a period of several weeks, it is necessary to make observations upon the temperature and pulse-rate. If the drug is really required, the temperature is almost without exception subnormal, especially in the evening, and the pulse-rate is as a rule slow. When the temperature rises to normal, the drug should be suspended, at any rate for a time, and the pulse-rate, whatever its initial figure, should never be allowed to go above 95 without calling a halt. In the case of children, other than cretins, the body-weight is a useful indication of the success of the treatment. So long as the weight increases the drug may be continued; as soon as the weight becomes stationary the drug should be suspended, and if the weight decreases the drug must be discontinued. Having ascertained by cautious increase from small beginnings the dose which best suits the patient, my usual practice is to continue the dose for three weeks. I then suspend it for a week and then resume it for three weeks, and so on. If the pulse-rate is not slow at first, or if there is any other factor in the case which makes me fear intolerance, I give the drug for a fortnight, and suspend it for a fortnight. In the case of adult women, it is well to arrange so that the menstrual period should occur during an interval from the drug. Given in the doses above recommended, and

managed in this way, there is only one sign of commencing intolerance for which one need be on the lookout: this is coryza. A sudden and profuse nasal catarrh sometimes surprises people who are taking thyroid extract, and unless the physician realizes that such a thing is possible, he may attribute the catarrh to some ordinary cause and fail to discontinue the drug. Another signal which has occurred in some of my cases is a painless enlargement of the glands at the angle of the jaw. It has always disappeared on suspension of the drug. A slight tenderness of the parotids, one or both, sometimes occurs.

In a few instances, at the commencement of thyroid medication, patients have exhibited all the symptoms of acute pancreatitis—*i.e.*, a sudden attack of violent pain in the epigastrium, with vomiting, constipation, and local tenderness, which have in each case all passed off in a few hours. The close antagonistic relationship between the activities of the thyroid gland and the pancreas is my reason for regarding the latter as the seat of pain. The sudden active stimulus of the thyroid extract upon a pancreas which for a considerable period had been free from that stimulus would probably result in such a degree of pancreatic hyperactivity as to cause the symptoms. The few patients in which these symptoms occurred were badly in need of the drug. Short of producing violent symptoms of this kind, it is by no means uncommon for patients taking

thyroid extract in doses which appear otherwise to suit them, to complain of feelings of discomfort after meals. The symptoms are usually those of the acid type, and they generally yield to alkalies and bismuth. Not infrequently, however, the combination of HCl and pepsin seems to be more efficacious. Thyroid extract is said to be useful in the treatment of urticaria, its action presumably being that of utilizing fully the calcium salts in the diet. This may be so, but it is to my mind quite certain that thyroid medication tends to provoke urticaria even in those who are not subject to this irritating complaint. I have frequently been obliged to suspend the drug on this account, with the invariable result that the urticaria has subsided.

Thyroid medication will occasionally, but by no means always, regulate the bowels. The stools of those taking the drug regularly generally become very light in colour. This may be due to an absence of bile pigment or to the presence of fats in excess. The latter cause is the usual one.

When it is acting satisfactorily in an ordinary case of moderate degree, thyroid medication increases very largely the urinary output. The occasional presence of albumin in the urine need not excite alarm, but the appearance of sugar should lead at once to suspension of the drug.

If the best results are to be obtained from thyroid medication, the ordinary mixed diet of the present day requires some slight modification. Carbohydrate

foods and alcoholic drinks are recognised as depressors of thyroid activity. I therefore direct those who suffer from thyroid insufficiency to be sparing in their use of them. Common salt I also endeavour to banish from the dietary.

CHAPTER VII.

GENERAL HEALTH.

'O, wist a man how many maladies
Folwen of excess and of glotonies
He wolde be the more mesurable
Of his diete, sitting at his table.'—CHAUCER.

To obtain clear ideas on the subject of general health, it is necessary to realize two very obvious, but frequently overlooked, facts. The first is that, whatever his intellectual and moral development may be, man is essentially an animal, primarily adapted to certain conditions and surroundings; and the other is that the needs of civilization have imposed upon him the necessity for, or the temptation to, certain modifications of these conditions and surroundings. The problem which presents itself is this: How far and in what manner can the modifications be effected without impairing his animal powers—that is, his physiological or animal efficiency?

That man was originally a semi-nude animal, living in the open air, who obtained his food by tilling the ground and hunting his game, may be taken as beyond controversy. These were the conditions and surroundings to which he was originally adapted. He has, in course of evolution, become a very much beclothed animal, who lives in houses, and obtains his food less by the sweat of his brow than by the

work of his brain. This change of environment ought, logically, to entail corresponding changes in his habits.

Certain changes have, doubtless, occurred, but they have for the most part been dictated, not by considerations of physiological suitability, but by those of pleasure or convenience. Departures from health are almost always due to offences against man's animal or physiological requirements; and if we would fully realize what those requirements are, we must endeavour as far as possible to understand his primeval conditions and surroundings, untrammelled by the mists in which his pleasures or his convenience have enveloped him. This is the only scientific attitude from which to approach the subject of his general health; for unless a scheme of living is in consonance with these general principles, it must necessarily rest upon a basis which is theoretical, and therefore insecure. The whole subject is too large to permit of its consideration in any real detail, but some aspects of the matter, approached from this point of view, may be useful in illustrating the advantage of appealing to Nature for guidance rather than to fashion.

There can be no doubt that man was intended to be a working animal; and by work is meant something which must be done day in, day out, whether the doing accords with the inclination or not. Physiological efficiency in every part of the body is dependent upon the regular exercise of function, and

what is true of each part is necessarily true of the whole. The man who does not work is never a reliable person, and he is seldom a healthy one—at any rate, for long. The normal individual demands legitimate outlets for his energy, and if he does not obtain them the energy becomes diverted into illegitimate channels. The majority of alcoholics, of hypochondriacs, and of neurotics, are people with nothing to do; and one, at any rate, of the reasons why women are more prone than men to functional nervous ebullitions is that they are, compared to the men of the same class, the leisured portion of the community.

To be healthy, then, a man should work. It is, of course, not an easy matter to compel a person to work who has no financial incentive thereto; but there is plenty of voluntary work for those who have the leisure to devote to it, and it would be a good thing if all members of the profession were to impress upon idlers the incontrovertible fact that idleness is by far the most potent enemy to healthy existence.

Whether or not man was intended by Nature to be a naked animal is a subject which need scarcely detain us. The climate of the temperate zone and the exigencies of modern life have imposed a certain measure of covering upon all civilized races. The question for us to consider is whether the nature and the amount of the CLOTHING which fashion now prescribes are such as to be conducive to man's

physiological efficiency. To elucidate this question we must glance for a moment at two of the functions of that important organ the skin.

The first of these to be considered is the power in virtue of which it contracts to a cold influence and relaxes to a warm influence. This power, in common with all the other vital powers, is dependent for its integrity upon its proper exercise. Here, as elsewhere, use gives rise to increase of function, disuse to abeyance, or loss of function. It is, therefore, obvious that the amount of clothing should be so regulated as not only not to interfere with this power, but, on the contrary, to afford every reasonable opportunity for its exercise. And we must not lose sight of the fact that the degree of efficiency of this function is a measure of the efficiency of the skin as a whole, because when one function of an organ suffers, the efficiency of the others becomes impaired. The right amount of clothing for a healthy person, therefore, is that which, while sufficient to protect the body from the harmful exposure to temperatures in which contraction cannot prevent undue loss of heat, is nevertheless not such as to protect the body from such a degree of cold as is necessary to the proper activity of the contractile power. In other words, the proper, the ideal, amount of clothing for a healthy person is the minimum which will protect that person from undue depression of temperature while following his usual employment.

If these conclusions, which are indeed sufficiently

obvious, be correct, it is clear that the great majority of people are grossly overclothed. To judge by the general practice in this matter, one would be driven to suppose that the object to be attained was the avoidance, not of harmful degrees of cold, but of all degrees of cold. This practice, objectionable as it is in the case of adults, amounts to something in the nature of a hygienic crime where children are concerned; for in addition to the interference with adequate metabolism which it causes in young and old alike, in children it militates against healthy development. The overclothed child has little incentive to run about and exercise his limbs and his lungs in the manner essential to normal animal evolution, and so it happens that rickets, adenoids, and ill-formed chests are, among the children of the well-to-do classes, the rule rather than the exception.

Parents should be reminded at every possible opportunity that their children are primarily young animals, and that the practice of coddling inevitably means defective development, with its consequent physical and mental degeneracy. A full measure of cold should always be allowed to reach the skins of young people. It keeps the cutaneous contractile power in good working order, and incites the children themselves to the muscular exercise upon which their proper development depends.

One of the best means of exercising this function of the skin is the cold morning tub. The exact temperature of the water to be used is a matter of

some importance, but it is one which can be decided only after a review of all the circumstances connected with each case. Speaking generally, it should be cold, but never so cold as to leave the bather chilled and miserable. The fashion of the moment prescribes the use of full-length baths. There is no objection to these in the case of healthy people, but for those who are weakly, the sitz bath is infinitely preferable. In the full-length bath all the blood is driven inwards to the internal organs, whereas in the sitz bath, the cold affusion being applied to various parts of the surface in turns, the determination of blood inwards is less sudden.

One of the advantages of the cold bath is that the whole cutaneous surface is thereby exposed to the air at least once daily. To reap this advantage to the full, care should be taken that the atmosphere in the bath-room is as pure as possible, and this is best secured by the open window. The cold bath has other incidental advantages. One is that to obtain the desired reaction people usually apply friction to the skin with a rough towel. This entails a certain amount of exercise which is altogether to the good, and it results in a general stimulation of the whole cutaneous surface, which is highly conducive to its physiological efficiency.

One of the cutaneous appendages—namely, the hair—often suffers from want of adequate stimulation. There has been a good deal of ingenious speculation as to the causes of baldness, especially

as to why it should be comparatively common in men and relatively rare in women. The absence of physiological stimulation in the one case and its presence in the other supplies in reality the solution of the riddle. Men cut their hair short, and so deprive the follicles of the stimulus which the mere weight of long hair affords. In addition, hair which is long entails a great deal more brushing and general attention than hair which is short, so that the hair follicles in man are deprived of a double measure of stimulus. If these facts were more generally recognised and acted upon, there would be less premature baldness than there now is. The drying process after the cold morning tub affords an excellent opportunity for thoroughly massaging the scalp by moving it freely on the underlying bone. If after this the brush is used forcibly enough to redden the skin, premature loss of hair is very unlikely to occur.

The drying process should also be utilized for the purpose of applying friction to the ears. By this means the sclerotic process which so often gives rise to premature deafness may be indefinitely postponed.

The other function of the skin which it is necessary to consider in this connection is the excretory function. The cutaneous excretions are discharged either as fluid or watery vapour, and it is, therefore, very properly held that the clothing to be worn in contact with the cutaneous surface should be of an absorbent nature. The material should have the power, that is, of rapidly taking up the moisture. Curiously enough,

the material which is all but universally prescribed for underwear—namely, flannel or wool—is precisely the one which has the least capacity for absorption. Flannel is a warm material, as it is called. No material is, of course, warm *per se*. All warmth is derived from the body itself, and one material is warmer than another in virtue of the fact that one is a worse conductor of heat than another. Flannel is a non-conductor of heat, by reason of the air-spaces it contains, because air is a bad conductor; but flannel is not absorbent. Silk, linen, and cotton are in a different category. These are all highly absorbent materials, but as their fibres contain no air-spaces they are not 'warm.' It is, however, possible to manufacture them in such a way that they shall contain air-spaces, and thus become efficient non-conductors; whereas it is quite impossible so to treat flannel as to render it absorbent.

The obvious inference is that flannel is not a suitable material for underwear, and that silk, linen, and cotton can all be rendered very suitable by causing their fibres to contain the air-spaces on which the reputation of flannel rests. These materials are all now manufactured on these principles, so that there is no longer any excuse for advising people to utilize wool or flannel for underwear. These two substances, which are in reality the same thing, as being practically unabsorbent, are inimical to healthy animal existence. When worn next the skin they imprison the moisture, and thus give rise to

deficient evaporation, diminished metabolism, and great disinclination to mental and bodily exertion.[1]

And not only should clothing be of a suitable material, but it should be constructed so as to give the limbs free play and allow the circulation to proceed without let or hindrance. Tight vests and clinging drawers are much too common, especially with the young. It is not very long since the profession had good reason to deplore the tight corsets affected by women. Fashion has fortunately decreed that these shall no longer be worn, but *en revanche* she has imposed upon the smart women of this generation a burden almost as deleterious. The tight, high collars stiffened with whalebone, which are *de rigueur* to-day, are scarcely less objectionable than the 'stocks' worn by our ancestors, or the highly-starched, double dog-collar beloved of the contemporary city clerk.

It should be remembered that the neck is an isthmus containing very important organs. To say nothing of the larynx, the thyroid, and lymphatic glands, it contains large bloodvessels for the supply of the brain, and is traversed by many important nerve-trunks. Very little consideration will show that constriction of such a tract must seriously impede the free movement upon which so much depends. The

[1] For a detailed discussion of this question, see 'Three Lectures on Personal Hygiene,' *Clinical Journal*, July 6, 13, and August 10, 1904; 'Some Aspects of Obesity,' *Practitioner*, May, 1904; and 'Rheumatics in Relation to Climate,' *Birmingham Medical Review*, May, 1905.

muscles waste, and the underlying organs become exposed to a pressure which Nature never intended them to encounter, with the result that headaches, giddiness, and the various symptoms of thyroid embarrassment quickly ensue. The neck should be as free as possible, and under no circumstances should tight or high collars be tolerated.[1]

General physiological efficiency is dependent more upon an **ADEQUATE SUPPLY OF OXYGEN** to the tissues than upon anything else. No one is capable of his best work unless he is able to obtain air of normal purity, and any habitual falling short of the normal lessens the general powers of resistance, and leads to disease. The normal standard of purity is given by authorities as 21 per cent. of oxygen and ·04 per cent. of CO_2, and they go on to say that a rise of CO_2 to ·08 per cent. is distinctly harmful. The normal standard is obtained from the examination of air in the country, on mountains, at sea, and in open spaces of towns, and it is found to be remarkably uniform in all portions of the globe, inhabited and uninhabited. The air in houses falls short of this standard, the proportion of CO_2 very commonly reaching ·05 per cent., and where a large number of people are gathered together, as in churches, theatres, concert-rooms, and the like, it not infrequently reaches ·08 per cent., or, indeed, ·1 per cent., either of which percentages represents gross impurity. The degree of impurity of

[1] See a paper by Dr. Walter G. Walford, *British Medical Journal*, April 20, 1912, p. 886.

an atmosphere is stated in terms of CO_2, because the amount of this gas is comparatively easy of estimation. The practice has one great disadvantage, however, which is that it is apt to give rise to the supposition that the impurity consists solely in the presence of an excess of CO_2, and we are liable, in consequence, to forget the far more deleterious substances which an impure air contains. These substances comprise organic matters, watery vapour, bacteria, and decomposing organic matter given off by the skin and lungs. It seems necessary occasionally to remind ourselves that the skin and lungs are excretory organs, the degree and importance of whose activities it is, on account of their unobtrusive nature, very easy to underestimate.

It is unnecessary to attempt any enumeration of the diseases and morbid states which are directly due to vitiation of the atmosphere.[1] When it has been said that such an atmosphere lessens the vital resistance to the attacks of the bacteria, which at the same time it supplies in great abundance, all has been said that is requisite for the appreciation of the paramount necessity for the maintenance, in the highest possible state of purity, of the atmosphere in which each one finds himself.

And this is a matter in which a very reasonable complaint may be lodged against the profession as a whole. In spite of the emphasis which has recently

[1] See 'Maladies caused by the Air we Breathe,' by Dr. Thomas Oliver (Baillière, 1906).

been laid upon the importance of fresh air, in the brilliant results obtained thereby in the treatment of phthisis, medical men, as a rule, are far too tolerant in their patients, and in the public generally, of impure and even grossly vitiated atmospheres. This tolerance is due in a large measure to the persistence of what may be called the chill theory—the theory, that is, by which any morbid condition whose etiology is obscure is attributed to the action of cold or chill.

It is not very long since phthisis, pneumonia, and influenza were confidently stated to be due to chill, and there are still some people who believe in pleurisy *a frigore*. In times still more remote, almost all diseases were deemed the result of chill. It is not surprising, therefore, that in the lay mind the word should suggest some obscure yet serious menace, nor that every precaution should be taken to guard against so deadly and ubiquitous an enemy. Among the causes of chill, draughts are always given the first place. To sit in a draught is regarded by many people who are otherwise sane and reasonable as the most unwise and dangerous proceeding, not because it is unpleasant, but because it is directly calculated to lead to serious disease.

There is not only no justification for this view, but it is diametrically opposed to what we now know to be the truth. The majority of diseases are due to microbic invasion: microbes of all sorts abound in polluted atmosphere, and there is no means of preventing an atmosphere from becoming polluted

except by the admission of fresh air. The admission of fresh air necessarily produces a draught, so that it is quite obvious that we have to choose between a draught, which is salutary, and stagnation of the atmosphere, which is deadly.

If the open-air treatment of phthisis has established anything, it has proved beyond all cavil that currents of air are not injurious. The patients at sanatoria live, as I have heard it expressed, in a gale of wind, and it is a fact that when they return from these institutions people are particularly intolerant of anything in the nature of stuffiness. These patients, we must remember, are what the French call *poitrinaires*—lung sufferers—and are therefore drawn from amongst those to whom, according to the chill theory, draughts are most deadly.

The success of the open-air system is in reality the *reductio ad absurdum* of the chill theory. Extreme cases are taken, not of the disease, of course, but of those who have delicate and debilitated air-passages, and who are therefore susceptible above all others to the supposed baneful effects of draughts. They are taken generally from the heart of a draught-eschewing household, and are suddenly, even in the depths of winter, deliberately and of malice aforethought subjected to a system in which exposure to draughts is the leading and essential feature. And what is the result? If there were the slightest basis of truth in the chill theory, they would die like flies; but, instead of doing so, they not only

continue to live, but they increase in vigour and in weight, and their disease becomes arrested. No more convincing proof could possibly be afforded of the baselessness of this ignorant and pernicious fallacy which is gnawing at the vitals of the community.

The moral of this is simple enough. We cannot all live in open-air sanatoria, even if we would, but we can all put in practice the principles of which these places have established the correctness and the value. It is the duty of the profession to instruct the public in the prophylactic aspect of the matter, and to educate people into realizing that tuberculosis is only one, even though it be the most important one, of many evils which inevitably follow in the wake of polluted air, and that a pure, clean atmosphere is as essential to the maintenance of healthy lungs as pure, clean water is to the preservation of healthy intestines. It is unnecessary to enter into detail on this subject. People can only be weaned from the chill theory by having it pointed out to them that those who practise it are unhealthy, and by being made to experience the superiority of the effects of fresh air, however productive of draughts its ingress may be.

Without adequate ventilation there can be no such thing as physiological efficiency, and in the present method of house construction the only means to adequate ventilation is the open window. And the window should be kept open day and night, not

occasionally only, nor 'a little bit at the top' (the virtues of which little bit being sadly marred by drawn blinds, well-secured shutters, and heavily-draped curtains), but sufficiently open to provide for that really effective circulation of the air upon which healthy animal existence necessarily depends.

The importance of **DIET** in the maintenance of health is now very generally admitted, the difficulty being to decide between the merits of the various rival systems which are advocated with considerable ability and much insistency by their respective authors. Dr. Alexander Haig[1] asks us to believe that any uric-acid-forming food is a slow poison, and invites us in consequence to delete from our dietary not only all fish, fowl, game, and meat, but also such vegetables as peas, beans, lentils, asparagus, onions, together with oatmeal, tea, and coffee. Dr. Hare,[2] on the other hand, brings a serious indictment against carbohydrates, and warns us to eschew them if we would avoid gout, asthma, migraine, and other evils. Dr. Chittenden[3] has made experiments to show that the main fault in our present system of dietetics is that we have hitherto overestimated by one-half the amount of proteid which is necessary to full mental and bodily activity, and that we can attain to real physiological economy only by reducing our intake under this head. Mr. Van Someren[4] insists that

[1] 'Uric Acid in the Causation of Disease.'
[2] 'The Food Factor in Disease.'
[3] 'Physiological Economy,' etc.
[4] *British Medical Journal*, October 12, 1901.

inadequate mastication is the root of all dietetic evil, and that every mouthful should be masticated not thirty-two times only, but until the mass is both fluid and tasteless.

All these writers—and each of them has many followers and co-workers—advance their various theories with great skill, and illustrate them by convincing cases. It is obvious, however, that they cannot all be right, and that to escape from bewilderment on the subject it is necessary to find a common denominator, a platform on which each can take his stand side by side with the other. Such a platform would seem to be provided by the proposition that the gravamen of the charge against the existing admittedly faulty system is that it leads in one form or another to surfeit. Dr. Haig, Dr. Chittenden, and Mr. Van Someren, either explicitly or by implication, condemn the use of food which has been obtained by the taking of life—food, that is, through which blood has circulated. They are, in fact, to a large extent, lacto-vegetarians. Dr. Haig's *index expurgatorius* is exceedingly comprehensive, but, then, it is the outcome of a theory—that, namely, which attributes to the action of uric acid the responsibility for the majority of complaints with which the human body is afflicted. This theory has had a great vogue not only with the profession, but with the public, but it is, nevertheless, one which it is very difficult to sustain.

It is admitted that unexcreted nitrogenous waste products are highly deleterious, and it is undeniable

that uric acid is one of these. But, although it is the most easily identified and measured, it is by no means the only one, and to use its ease of identification as an argument in favour of its sole responsibility is as fallacious as it would be to suppose that carbonic acid gas constituted the sole cause of the pollution of an atmosphere in which it was present in excess. Dr. Haig's diet, then, if it succeeds, as in many cases it undoubtedly does, succeeds for reasons other than those which are advanced in its favour.

It is a matter of importance to determine how far these systems can be reconciled with the incontrovertible fact that primeval man was to a very large extent a carnivorous animal. The matter would seem to stand thus: Primeval man was nomadic, and depended for his sustenance largely upon hunting, and other forms of vigorous muscular exercise, which enabled him to digest and dispose of large quantities of animal food.[1] In course of time he has become stationary and even sedentary, so that the muscular exercise which justified, and even perhaps necessitated, his carnivorous habits is no longer an essential portion of his existence. Thus it comes about that he is now physiologically unable to deal with foods of any sort, but especially with flesh foods, in anything like the same quantity as formerly. The muscles are the great furnaces in which foods are burned, and if the furnace burns low the foods are suboxidized. The

[1] Dr. Harry Campbell: 'A Lecture on Diet,' *Clinical Journal*, March 14, 1906.

fuel, instead of being burned to ash and discharged, is converted into cinder and retained. There are two ways of meeting such a difficulty—the one by increasing the oxidation, the other by diminishing the fuel. In the case of the ordinary twentieth-century man the former is practically impossible, so that the physician and the hygienist must have recourse to the latter.

Of course, there are enormous personal differences in the individual capacity for dealing with excessive food, differences as striking and as inexplicable as those which exist in the matter of stature; but there seems to be no doubt that each succeeding generation becomes less able than its predecessor to cope with, and adequately to dispose of, a diet which in quantity as well as quality is an imitation of that to which primeval man accustomed the race.

The exigencies of our present mode of life being what they are, it seems necessary that we should seek to adapt our dietetic habits thereto, and our guide in this matter, as in all others, should be the attainment of physiological efficiency. A truly scientific working standard could be arrived at only by gauging the irreducible minimum upon which full physiological efficiency could be maintained. For various reasons, which include personal, racial and climatic differences, such a standard is beyond our reach, but inasmuch as food is agreeable, it is safe to assume that such dietetic errors as are habitually committed arise from excess rather than deficiency of its consumption.

The systems of diet above referred to have this in common, that they aim at a general reduction of intake. Most of them, it has been shown, provide for the abolition of flesh foods.

Now, this last arises partly on account of the fact that some individuals, an increasing number perhaps, are unable to consume such foods without suffering from troublesome symptoms; but it is also due to the stimulating properties of such foods, to the effect which they produce in augmenting the whole quantity of intake—the provocation, that is, of the insidious 'appetite which comes with eating.' The foods of a lacto-vegetarian régime, if they possess this tendency at all, possess it in a very minor degree; so that one, at any rate, of the advantages of such a régime is that there is, in those that follow it, much less likelihood of the evils of over-alimentation than there is in the case of the ordinary mixed feeder.

The explanation of Dr. Hare's position, that it is the excess of carbohydrates rather than of proteids which is responsible for those faults of metabolism as to the existence of which all are agreed, would seem to indicate that some individuals tend to revert to the physiological type which prevailed in man's carnivorous period, and that these persons, therefore, display an inability to cope with carbohydrates which is as definite as the inability of others to cope with proteids. But even these cases can be reduced to the common denominator, which is represented by the necessity for a general reduction of intake. Though

meats are undoubtedly stimulating and appetizing when consumed along with other kinds of food, a régime consisting solely of proteids very soon induces that form of disinclination and ready satiety which is expressively known as *toujours perdrix*.

There would seem, then, to be no escape from the position that such evils as are associated with our present system of dietetics are evils which arise, not from any faults in the quality of the foods ingested, but rather from the quantity of these foods which, in spite of his sedentary occupations, man still insists on consuming. It is a commonplace that we all eat too much, but a recitation of the belief seems very seldom to lead to an improvement in the practice, and such improvement is not likely to occur until we can succeed in bringing home to our patients the physiological inefficiency and its consequences which habitual excess necessarily entails. The causes of this excess are numerous. The most prominent is perhaps mere selfish indulgence in the pleasures of the table, accompanied, as it often is, by a grim determination to suffer the consequences of surfeit rather than forego the pleasures. Another cause is mere careless habit. When people are young and vigorous they can consume large quantities of food, not only with impunity, but even with seeming benefit, and the habit thus begotten is apt to be continued long after the age of impunity is passed. A third cause is the deficient mastication of foods. This is the keystone of the system which Mr. Van

Someren has brought into prominence, and there remains no doubt in the minds of those who have tried this system, that adequate mastication, according to the standard laid down, leads to a decrease in the whole quantity of intake, which is very surprising.

The rationale of the system may be briefly stated as follows: We live by what we digest, and not by what we eat. That we eat more than we can digest is evidenced by the large amount of fæces which we daily evacuate, and whose regular discharge we have come to regard as so urgent a necessity. For fæces, we are reminded, are not the products of digestion; they are the materials which have escaped the digestive process, and represent, therefore, the excess of intake over the legitimate physiological needs. And we take this excess because we do not prepare our foods by adequate mastication and insalivation. If we did this, we should not feel the desire for the excess which many now feel. The desire is probably begotten by the demand from the economy for suitably prepared food. In response to this demand, a food is supplied which is not suitably prepared, and the needs of the economy are, therefore, imperfectly satisfied, so that the demand is continued until the stomach is physically incapable of holding more, and a mechanical satiety is induced. The ultimate disposal of this excess places a great strain upon the digestive and excretory organs, more especially the kidneys, so that suboxidation and deficient excretion, leading to dyspepsia, gout, and

constipation, are the conditions which dominate our everyday lives.

Among the remaining causes of excessive eating, the practice of drinking fluids with the meals must be given an important place. This prevalent practice is quite unphysiological. If we seek a lesson from the lower animals in the matter, we find that none of the mammals are in the habit of drinking with their meals. The taking even of pure water with a meal enables the person to eat more than he otherwise would. There are some differences of opinion as to why this should be, but the fact itself is not in dispute. The probability is that the extraneous fluid supplies the moisture which ought in reality to be supplied by the saliva. The saliva not only digests certain foods, but it also lubricates the whole mass, and if this lubrication is artificially provided, the person tends to take an excess of solids. Fluid is, of course, very necessary to the economy, but it should not be taken at meals. The best time to take it is about half an hour before a meal, but if this is inconvenient, as it often is, the drink should be delayed until all the solids have been eaten. There is one great advantage in taking fluid before a meal, which is that it exercises a flushing effect on the stomach, and tends to free that organ from any remains of a previous repast which it may happen to contain.

And if the taking of fluids of all sorts can thus be held responsible for a larger consumption of food than

is necessary, it is obvious that the ingestion of a local and general stimulant, such as alcohol, must be productive of the same effect in a very much higher degree.

It is impossible to enter here into the ethical side of the question of alcohol. The physiological side may be expressed by saying that whereas its occasional and infrequent consumption may justly be regarded as a legitimate indulgence, its habitual use, especially for those who have to work with brain or muscle, is undoubtedly fraught with evil; and further, that, if taken at all, it should be taken, not with the meal, but after all the solids have been consumed.

There is, however, one aspect of the matter which seems deserving of brief notice—namely, the form in which, when it is recommended, it is now the fashion to take alcohol. It has now been the custom for some years to recommend those who insist upon taking alcohol of some kind to take it in the form of spirits rather than in the form of wine or beer. This custom has very little to recommend it. In the first place, spirits are by far the cheapest, the easiest, and therefore the most insidious, form in which alcohol may be taken, and thus lead much more readily to habitual excess than either wines or beers. Moreover, of the diseases which are commonly attributed to alcohol, such as cirrhosis, hepatic and renal, and various diseases of the nervous system, the great majority appear in spirit-drinkers, and not in those who take merely wine or beer. Most spirits contain 50 to 60 per

cent. of alcohol, and they all owe their stimulating properties almost exclusively to this element in their composition. Wines, on the other hand, contain on an average about 10 to 15 per cent. of alcohol, and owe their stimulating properties largely to the volatile ethers which give them their bouquet. The alcohol, as we know, leaves its mark upon the liver, kidneys, and nervous system—that is to say, it circulates a long time in the blood before it is excreted. The ethers, on the contrary, pass rapidly out of the system through the lungs, and a few hours after their ingestion they have quite disappeared. And yet we hear it said that whisky is 'wholesome.' What exactly is meant by the adjective in this connection it is difficult to say, but this, at any rate, is certain—that of all the methods of taking alcohol, spirits, whether in the form of whisky, brandy, gin, or liqueurs, are the most insidious and dangerous beverages to recommend to patients.

A practice which is commonly associated with that of whisky-drinking is the taking of aerated waters. This is another custom which, on physiological grounds, it is impossible to defend. Gaseous distension of the stomach leading to dilatation is a very common complaint. It may be too much to say that it is often induced by the consumption of aerated waters, but there can be no doubt that it is frequently gravely aggravated thereby. These waters are in public favour apparently because they, too, are considered 'wholesome.' No good purpose

can possibly be served by introducing carbonic acid gas, normally a waste product of metabolism, into the system at all, and to introduce it into an organ which is all too frequently the subject of gaseous distension is a dietetic error too obvious to dwell upon. The drinking of fluids with meals, then, as tending to over-alimentation, should be discouraged. If alcohol is taken at all it should be in the form of well-matured wine, and its consumption should be reserved for the end of the meal. Aerated waters are powerless for good, and very potent for evil. Their habitual ingestion should, therefore, be forbidden.

Such are among the most important causes of overeating. The broad effects of this practice may now be briefly considered. Unnecessary food which is introduced into the system is not, as is commonly supposed, passed on and discharged as useless. All assimilable material is assimilated; it is only the unassimilable which is rejected. If too much assimilable material is taken, the organs concerned in the metabolic processes have too much work thrown upon them. If they are able to perform this work, the blood becomes surcharged with oxidizable matter, so that instead of being a nutrient, the plasma is in the nature of a depressant, producing the same results as an excess of fuel produces on a fire. Hence it is that overeaters are generally dyspeptics, and are usually either drowsy or irritable after a meal. The organism, however, makes an effort to cope with this excess, and calls for a plentiful supply of oxygen

to carry on its work. This explains the dyspnœa, the breathlessness of slight effort, of which such people generally complain. The overloaded condition of the plasma constitutes an irritant either to the walls of the bloodvessels or to the vasomotor centres in the brain, thus producing constriction of the smaller arteries, and a consequent general rise of blood-pressure. The task of excreting the excess is undertaken mainly by the kidneys, which important organs have therefore cast upon them an amount of work which is out of all proportion to the physiological necessities of the case. If the metabolic processes do not succeed in adequately coping with the surplus food, the surplus is suboxidized, and causes the symptoms in various parts which are spoken of as gouty or rheumatic. The evils of excessive eating, therefore, may show themselves in any system or organ, but, except perhaps in the case of the stomach itself, the disturbance is due to the overloaded state of the liquor sanguinis, and it is consequently in the circulatory system, by the occurrence of dyspnœa and increased blood-pressure, that the earliest symptoms are most likely to show themselves (*vide* Goutiness, p. 221).

There are two ways of combating the evil effects of overeating in its early stages: the one is by the obvious course of reducing the amount of the intake; the other, by increasing the oxidizing processes. It is unnecessary to dwell upon the former further than to emphasize the fact that the older a person grows the less

food does he require. The French say that man does not die—he kills himself; and the same idea is expressed in our own saying that man digs his grave with his teeth. Certain it is that when middle age is reached, it is only those who live a vigorous life in the open air who can indulge in the pleasures of the table with any degree of impunity. For the sedentary liver who would retain a full measure of physiological efficiency a considerable, if gradual, reduction of intake becomes essential at this age, and the reduction should proceed *pari passu* with advancing years, until at three score and ten it has reached a minimum. A distinguished physician, who is still alive, has explained his vigorous old age by saying that he never rises from a meal without feeling that he could sit down and eat it all over again.

The alternative of increasing the output by stimulating the oxygenating processes brings us to the question of **EXERCISE**. Here, again, having regard to the enormous personal differences which exist, it is quite impossible to lay down any hard-and-fast rule. This, however, may be said with confidence—that he who eats much, must exercise much, and the man for whom much exercise is impossible must meet the situation by consuming little. It is a common experience that brain work in the study is, with some people at any rate, an even greater provoker of appetite than muscular exertion in the fields. The explanation of this fact is too involved to enter upon here, but it may be asserted that the hunger begotten of study should not be appeased in the same manner

as that which is begotten of muscular exertion. For the latter, a plentiful supply of nitrogenous foods, especially of meat foods, is sometimes considered appropriate. Although very decided doubts are now expressed upon this point, it seems generally to be agreed that such foods when taken in abundance by a sedentary worker lead inevitably to impaired health. The man, then, who has ample opportunity for efficient oxidation may be left to work out his own dietetic salvation; but he who is deprived of such opportunity should have it explained to him that, be his study-begotten appetite never so vocal, he must satisfy it otherwise than by meat foods and alcoholic drinks.

Of exercise in general, it may be said that the necessary amount depends upon individual requirements, a powerful factor in determining which is the amount of food consumed. It also depends to a great extent upon individual opportunity, and the amount to be recommended in each case can be arrived at only after due consideration of these points. The best kind of exercise is also a matter which must vary considerably in each case, though riding and golf are, as a rule, appropriate to both sexes and all ages. The objection, however, which is to be urged against these and most other exercises, with the exception of rowing, is that they contribute nothing to the development of the abdominal muscles. The importance of keeping these muscles in good condition must be evident to those who remember that, practically, they constitute the anterior abdominal

wall, and that if they are allowed to become lax they fail to give adequate support to the internal organs. There was at one time a good deal of talk about the responsibility of the 'abdominal pool,' or 'splanchnic lake,' for deficient metabolism, and practitioners at health resorts, especially in Germany, are still in the habit of attributing a good many of the morbid conditions which they are called upon to treat to 'abdominal venosity.' These are, in reality, all synonyms for the same thing—namely, the state of matters which is brought about by lax and undeveloped abdominal muscles.

To keep these muscles firm and in good order their regular use is essential, and, as the ordinary forms of exercise help but little in this direction, it is evident that we must resort to an exercise *ad hoc*. Various forms of such an exercise have been recommended, but the one which seems to be the best, in that it is not difficult, violent, or time-consuming, is the following: Wearing as little clothing as the circumstances permit, and with the windows wide open, the patient lies on his back on the floor, with his feet under the opened lowest drawer of a chest of drawers, or anything else which will keep his feet from rising from the ground. With his arms fully extended above his head and touching the floor in their whole length, he proceeds to pull himself into the sitting posture by means of his abdominal muscles, keeping the knees unbent. Care must be taken not to advance the arms beyond the line of the trunk, and to perform the movement

deliberately. This will be found a very trying discipline to those who are unaccustomed to use their abdominal muscles; indeed, it is to many quite impossible, so that it is wise to begin with a modification, which consists in allowing the arms to be crossed on the chest while the rectus muscles pull the trunk forward.

This exercise should be done two or three times each morning to begin with; and when it can be done seven times without undue effort, the arms should be placed above the head as first described. With the arms thus placed, the number of times must again be reduced and then gradually increased as before. Another exercise which may immediately follow on the foregoing is performed as follows: The feet are released from the chest of drawers, and, still lying flat on his back, the patient raises the fully extended legs until they are at a right angle to his trunk. While this is going on, the hands are engaged in pinching up the skin and otherwise massaging the abdomen. These procedures may sound very formidable, but they are in reality not so. If they are done regularly, without hurry or strain, they take very little time and can do no harm, while their effect in keeping the figure from becoming aldermanic is very marked. This consideration appeals to most people—more especially to women—and if a greater number of the fair sex undertook these exercises there would be fewer cases of floating kidney and other abdominal and pelvic troubles than now unfortunately exist.

Of other exercises which are adapted to ordinarily healthy people who have insufficient opportunities for spending much time in the open air, skipping holds a high place. Although usually regarded as suitable only to children, it is in reality a very excellent discipline for middle-aged and even elderly people, when undertaken with due regard to the necessities of each case. It exercises every part of the body, including the abdominal muscles, and subjects the internal organs to a species of massage which is very beneficial.[1] There are several systems of exercises, Swedish, Danish, and others, now in vogue, the majority of which, as entailing no violent exertion, and as tending to keep most of the muscles in good working order, may be confidently recommended to healthy persons. All these exercises should, if possible, be performed daily, as a matter of routine, in the morning before the bath, and preferably in a room the window of which is wide open.

The question of the temperature of the daily bath is one which is often referred to the medical man. I have already said that as a general rule it should be cold — that is, of a temperature between 40° and 60° F. This, however, refers only to healthy people under middle age, in whom a reactionary glow is easily obtained by the aid of a rough towel. To such people a cold bath is very invigorating; it

[1] The Girbola.

promotes metabolism and effectually exercises the contractile power of the skin. If, however, it should not be followed by a reactionary glow, or if it should cause headache or loss of appetite, it should be discontinued. People who from any cause have a blood-pressure which is definitely above the normal, always complain of discomfort after a cold bath. The contraction of the peripheral arterioles increases the arterial tension, and if the baths are persisted in, accidents are very liable to happen. I have more than once been led to the discovery of an otherwise unsuspected vascular disorder by complaints of headache, giddiness, and the like, which have been positively referred to the cold morning tub.

Where for any sufficient reason it is decided that the daily bath should not be taken quite cold, it is necessary to decide at what temperature it should be taken. A tepid bath is one which, though definitely below the normal temperature, is, nevertheless, not so cold as to cause much contraction of the cutaneous vessels—that is, from 85° to 95° F. A warm bath is one which is about the same temperature as the surface of the body, and causes neither contraction nor dilatation of the cutaneous vessels—that is, from 90° to 98° F. A hot bath is one which is substantially higher than the normal body temperature, and tends to cause dilatation of the cutaneous vessels—that is, from 98° to 105° F. In connection with the hot bath, it is to be remembered that its effect varies not only with its temperature, but with its duration, and,

further, that there are a great number of personal idiosyncrasies in the degrees of heat which can be tolerated. Women, as a rule, can take baths at much higher temperatures than men.

Very hot water causes an initial contraction of the cutaneous vessels, but if the bath be prolonged, this effect gives way to one of dilatation, and the ultimate result is one of general relaxation. If, therefore, the hot bath is substituted for the cold morning tub, it should be made clear that the exposure to the hot water, though it should not be so prolonged as to produce a general relaxation, should nevertheless be prolonged enough to enable the cutaneous vessels to recover from their initial contraction. If a daily hot bath of long duration is desired, it should be taken, not in the morning, but at night, when the day's work is over and relaxation is normal and physiological.

It is said by some physicians, chiefly on the Continent, that a daily bath is not only unnecessary, but actually injurious, on account of the fact that the natural oil of the skin is thereby removed. Such a view has nothing whatever to support it. The 'natural oil' of the skin is an excretion, and it should be removed at least once daily with the aid of soap and a due amount of friction. For those who are unable to take a cold morning tub, the warm bath of not more than 100° F. is the most generally suitable for these necessary daily ablutions. The duration of such a bath should not exceed five minutes.

CHAPTER VIII.

OLD AGE.

But yesterday we were being told that a man is too old at forty. To-morrow we shall have to regard him as still youthful at fifty. For so large a proportion of those between twenty-five and forty-five will have passed dutifully and gloriously into the eternal shadows that our estimates will undergo a compulsory revision. The desire for longevity, instinctive but wholly irrational, will thus become something like a duty; provided always that the longevity is accompanied by a fair measure of physical and mental vigour. Length of days without competency is the reverse of desirable. There is no family so deserving of commiseration as that which includes a member who is a senile and peevish autocrat, or, worse still, one who is a senile and physically healthy imbecile. Old age with mind and body unimpaired is admirable; it carries with it lovable qualities of heart and brain which are seldom otherwise encountered; but old age as it is too often seen is unlovely and unlovable. In the vast majority of cases it is true as Cicero puts it, that *senectus ipsa morbus est.* When efficiency

becomes seriously impaired, continued existence is an incurable disease, by no one, in no wise, to be coveted.

Some of those who recall Solomon's admonition, 'Remember now thy Creator in the days of thy youth, while the evil days come not, nor the years draw nigh, when thou shalt say, I have no pleasure in them,' seem to imagine that, by taking thought, they may indefinitely postpone the evil days; and their method of taking thought not infrequently leads them into very fantastic precautions. Forgetful or, more probably, ignorant of Plato's profound saying that 'attention to health is the greatest hindrance to life,' they become converts to every new hygienic gospel, and sit willingly at the feet of any prophet, dietetic or psychic, who will peddle them an earthly Paradise from an ass's pannier.

With the wit and truth which scintillate in so many of their sayings, the French have it that: 'Pour vivre longtemps il faut une bonne digestion et un mauvais cœur.' Matthew Arnold, in a characteristically grim couplet, remarks that the only thing which old age has in common with youth is discontent. In another poem, the same staid cynic of the seventies says that when old we 'feel but half, and feebly, what we feel; deep in our hidden heart festers the dull remembrance of a change, but no emotion, none.' The arch-cynic Swift goes gloatingly into greater detail. He portrays for us the Struldbrugs whom Gulliver found on the island of Luggnagg. These creatures never died. Gulliver

at first envied them, but he ended by hating them. 'They were not only opinionative,' he says, 'peevish, covetous, morose, vain, and talkative, but incapable of friendship and dead to all natural affections. Envy and impotent desires were their prevailing passions.'

In spite of Cicero's saying, old age is not, of course, physiologically, a disease, any more than infancy is a disease. It is a stage in the evolution of the individual. It may come early or late; but it comes. Some people—*e.g.*, the victims of pogeria—become senile at puberty; others have already run their course at forty-five; some retain their manhood until the sixties; but it is very rare to find anyone over seventy who does not bear quite unmistakable marks of physical decline.

As infancy is the time of tumultuous, erratic, disorderly reaction, and adult life the period of deliberate, generalized, orderly reaction; so is old age the period of slow, blunted, and apparently dissociated reaction. There is a story of Rudyard Kipling's in which the various parts of a ship on its trial trip keep crying out to one another, but by the end of the journey there was no further conversation as there were no longer any parts. The ship had found herself and become homogeneous. It is thus with the human body. In infancy one organ which is hurt cries loudly to the others, all of which join lustily in the discordant chorus. As the years advance the response becomes less and less, until in old age each organ keeps its grievances to itself. This is very

puzzling to those whose practice has been mainly among children and adults, for the general reaction and concomitant symptoms upon which they are accustomed to rely for confirmatory evidence are generally wanting. The pulse-temperature ratio, for example, is very different to that which is customary in febrile states in adult life; for the pulse-rate remains low though the temperature be high. It is the same with the pulse-respiration ratio, for in old age dyspnœa is easily provoked by slight causes, whereas heart-hurry seldom occurs. As each organ is thus to a large extent autonomous, there is no massing of the general powers of resistance of the whole organism, with the result that acute affections in old age show a great tendency to become chronic.

In dealing with elderly people this cardinal fact of their blunted reaction and lengthened period of recoil from stimuli must never be lost sight of. It is the key to much which would otherwise seem paradoxical; it explains the otherwise inexplicable. Pain, for example, is never so acute in the aged as it is in the adult or the young. Even the pains of hepatic or nephritic colic, which in the adult are amongst the most agonizing which he can endure, are so much reduced in old age as to become almost imperceptible; and the older the patient, the less is the pain. The question of temperature affords another example. When the thermometer is used in the ordinary way by being placed in the mouth or the axilla, it may fail to register any febrile move-

ment although the real temperature, as taken patiently in the rectum, may be as high as 101° F. The reaction to mental and moral stimuli is notoriously enfeebled in old people. Even when they do not exhibit the vices of Struldbrugs they tend to become self-centred and heedless of matters which do not concern their physical condition; or, they tend to lose the control of the higher centres, and display unreasoning and impulsive irritability. The expression 'second childhood' is by no means a pointless gibe.

The general hygiene of old age differs in many material respects from that which is applicable even to late adult life. The aged are, for example, peculiarly liable to external parasites, both animal and vegetable. Pediculi of all kinds seem to have an instinctive knowledge of the easy prey which old people present, and this, coupled with the relative insensitiveness to pain in the victim, is liable to give rise to results against which special precautions are necessary. Among vegetable parasites *Microsporon furfur* is extremely common. It is not infrequently mistaken for the pigmentation which is so common in the senile skin, possibly as the result of suprarenal insufficiency.

The maladies which afflict the decadent period of life are none of them peculiar to that period. The same diseases and affections are met with in the adult, the adolescent, and even in the child. It is nevertheless true that certain diseases are more common in advancing years than they are in the

earlier periods, and that the diagnosis of these diseases presents difficulties and their treatment demands modifications, due solely to the age of the patient. Among the best illustrations of these peculiarities are those connected with the gastro-intestinal tract. The dyspepsias of old people very seldom conform to the types with which all are familiar in the adult and the child. Not only has the physician to bear in mind the spectre of carcinoma, but he has to remind himself that gastric and duodenal ulcers are by no means uncommon, and that they give rise to little or no pain and very few general symptoms. Chronic constipation is so frequent in old age as to amount almost to a normal accompaniment of senescence, and even when very obstinate it sometimes seems to do no harm whatever. Elderly patients have often been known to protest that they feel much better when they are constipated. In the presence of gastro-intestinal troubles in the aged the possible responsibility of a hernia should never be lost sight of. Herniæ are almost as common in old people as constipation itself. Cardio-vascular affections bear a character of their own and attain to a special significance with advancing years. These in themselves would constitute a long chapter. Deviations from the normal in the domain of the central nervous system are in many respects very dissimilar from those which occur in the adult. To the rule of relative analgesia which has already been referred to as characteristic of senectitude there are two notable exceptions.

One is that true neuritis in old age is liable to be very protracted and severe, as for example the pain which follows herpes zoster. The other is that pruritus, both general and local, is certainly more intense, more obstinate, and more wearing in the old than it is in the young.

There has been much discussion concerning the causes which determine that one man should be senile at fifty and another similarly circumstanced should still be young at seventy. It is said to be a question of their respective constitutions. That is doubtless true, but it is necessary that we should understand what we mean by a constitution. The constitution of any given person depends upon the accuracy of his metabolic changes. By accuracy I mean the proper co-ordination of his intake, his assimilation, and his output. If at the outset he is well endowed with co-ordinative power, if, as the French say, he is originally well equilibriumed, then his constitution is good. If, however, there be a piece which does not quite fit the dovetail, whether it be too large or too small, a thought too narrow, or a trace too wide, the other members are strained, and though in favouring conditions the machine may appear to work smoothly enough, the weakness becomes painfully apparent in times of stress and the duration is less seriously affected.

Of these three, intake, assimilation, and output, in the early years when the constitution is being stereotyped, as it were, the assimilation is by far the most important. In later life the importance of

this element wanes, and it is the output which becomes paramount. Adequate anabolism in infancy and childhood, energetic katabolism in adult life and advancing years—these are the bulwarks of the constitution.

Time was, and that not so very long ago, when our knowledge of matters metabolic was very rudimentary. Tissue change was regarded partly as a nervous phenomenon, but mainly as a dietetic drama, in which a harmless enough creature called uric acid very successfully posed as the villain. To-day we know more, but there is much knowledge still to seek. We know that metabolism is under the direct control of the internal secretory glands. We know that these glands preside over growth and development in infancy and childhood, that they are essential to mental, physical, and reproductive efficiency in adult life, and that they are responsible for the maintenance of katabolic balance in the period of decline. It is therefore no exaggeration to define the constitution of an individual as the resultant of his internal secretions.

Lorand has sustained at some length and with considerable ability the thesis originally put forward by Leopold Levi to the effect that the causes which give rise to the phenomena of senescence are due to the decline in the activities of the thyroid gland. It is not of course suggested that old age itself is due to a failure of the thyroid, but it is contended that many of the disagreeable and disabling concomitants of senescence can be directly traced to this cause.

Leopold Levi has compared some of these concomitants with the symptoms of myxœdema, and points out that they have much in common. The asthenic state of the skin and its appendages, the subnormal temperature, both subjective and objective, the muscular weakness, the failure of memory and the difficulty of mental concentration, the affections of the gums and the disorganization of the teeth, the rheumatic pains, the constipation, and the tendency to vascular degeneration, are all of them salient features both of myxœdema and senility, and present a series of similarities which can scarcely be dismissed as fortuitous. This is certainly an unduly restricted view of the matter, for it is quite certain that in common with the thyroid, all the endocrine glands, notably the gonads, the suprarenals, the pituitary, and the pancreas, undergo anatomical changes which seriously impair their functional activities. The phenomena of old age are therefore due to a general lowering of endocrinic activity and not to the failure of one gland only, important though that one gland admittedly is. There can, for example, be no doubt that the testicular decline is an important factor in the production of some of these phenomena, nor that the suprarenal and chromaffine failure accounts for others; and it is more than probable that some will ultimately be traceable to the pituitary and others to the pancreas. The practical value of this view of the question is to be found in the light which it throws not so much on old age itself, as on its premature onset and on many of its least bearable accom-

paniments. It holds a promise that the study of the ductless glands in health and disease will enable us to afford a measure of relief in the treatment of senile conditions which has hitherto been impossible.

The personal hygiene proper to the senescent does not differ very materially from that which should be observed in the middle years. It might be expressed as 'Fresh air, meagre fare, freedom from care.' Upon the first, it is unnecessary theoretically to insist; but practically a great deal of insistence is often necessary. The low body temperature and subjective chilliness which characterize the aged is all too often made the excuse for stuffy parlours and sealed bedroom windows. The inevitable consequence is deficient oxygenation with its resultant decline in metabolic activity. It is said that Queen Victoria owed her length of days and her maintained mental vigour to her careful regard for Sir William Jenner's repeated injunctions about fresh air and the open window.

In the matter of 'meagre fare,' medical insistence is even more necessary. Unfortunately, however, it is seldom forthcoming. The ordinary layman, and even more the ordinary laywoman, is convinced, with a conviction which nothing can shake, that the feebleness of the elderly requires correction by a liberal dietary, and the ordinary practitioner either from weariness or tactfulness declines to engage in an unequal combat on this prickly question. When he is courageous enough, he will not fail to point out that a feeble body means feeble digestive organs,

and that enfeebled digestive organs cannot in the nature of things be expected to deal with a liberal intake. Let him repeat, even *ad nauseam*, that man lives by what he digests, and not by what he eats. 'Meagre' in this connection applies as much to quality as to quantity. In place of the strong meats which his womenkind unceasingly thrust upon him, the elderly man should be encouraged to eat vegetables and fruits, especially such as are uncooked. It is a popular, and as yet an unexploded, fallacy which teaches that uncooked foods are difficult of digestion. The exact opposite is the truth. There are some principles, called vitamines, which, though present in abundance in most uncooked foods, are nevertheless absent from foods which have been subjected to any cooking process. The exact nature of these principles is unknown, but observation and experiment have shown that they are of vital importance both to the very young and the very old. Those with feeble digestions should be encouraged to take such foods as are known to contain them in relatively large quantities. Such are dairy produce—milk, cream, butter, eggs, cheese; uncooked vegetables—lettuce, tomatoes, celery, endive, watercress, cucumber, and the like; and fresh fruit of all kinds. For the rest, cooked vegetables are better than meat, poultry, and fish; green vegetables are better than root vegetables. The best among the green vegetables is spinach—*le balai des intestins*, as the French call it. A dietary regulated on these principles will be found to supply

a large sufficiency of nourishment without putting any undue strain upon the endocrine system. Talleyrand described man as '*une intelligence contrariée par des organes.*' The organs to which he referred, though he did not know it, were the organs of internal secretion: their contrariety arises from their exhaustion by excess of unsuitable food.

Freedom from care is a blessed state to which we all aspire, but it is by no means certain that it is good for us when we get it. Freedom from petty worries is desirable at all periods of life, because energy expended upon unessentials, such as trivial domestic troubles, leaves so much less for application to essentials; but it is not desirable that anyone at any period should be wholly free from such cares as are necessarily incidental to the serious business of his life. No good craftsman finds his work a pastime, and it is good for a man, mentally, morally, and physically, to have work to do which he feels under an obligation to do well. This is true at every stage of life, but it is more especially true as the years advance. There is an old saying that it is better to wear out than to rust out, and certainly the best way to avoid rusting out is to work. That a busy and even a harassing life is quite compatible with unimpaired efficiency and length of days is evident from the examples which could be furnished from public men in all countries, and there is little doubt that the maintenance of efficiency into the octogenarian period in these cases has been due to the continued vigorous exercise of the mental faculties.

CHAPTER IX.

SOME DRUGS, AND THEIR USES.

It is told of Sir Astley Cooper, who was not only a great surgeon but a wise man, that he was in the habit of warning his students against new remedies. 'If,' he said, 'you are too fond of new remedies, two consequences will follow. The first will be that you will not cure your patients; the second, that you will soon have no patients to cure.' Much the same idea is expressed in the phrase attributed to a distinguished physician of a later period, to the effect that 'the dangerous man is he who treats symptoms with new drugs.' There is, of course, nothing inherently wicked in the use of new drugs; it may, indeed, be affirmed that if no one ever tried them a correct estimate of their respective values would never be formed.

On the other hand, it seems to be a fact that an affection for new drugs has a tendency to lead to a neglect of those whose virtues are well established; and as a large proportion, a very large proportion, of new drugs are useless, the man who employs them helps his patients but little. Moreover, there are

certain drugs which are so well established that they constitute the standards by which we measure their new competitors, and it is obvious that if we are not thoroughly at home with our standards, no useful comparison is possible.

It is said that the late Sir Henry Thompson, at one of his professional dinners, which were called octaves (eight o'clock, eight people, eight dishes, and eight wines), placed a card in front of each guest asking him, without consulting with anyone, to write thereon the names of the eight drugs he would select if he were in future to be rigidly confined to eight. History does not record the result of this election, but we are given to understand that there was a wonderful similarity in the voting-papers.

If the result had ever been published it would almost certainly have shown that old drugs, such as opium and mercury, headed the poll, and that new drugs were conspicuous by their absence. I should myself be very sorry to be confined to eight drugs—or to eighteen, for that matter—for the remainder of my career; but if such a calamity were to befall me, of those eight not more than one would be less than twenty-five years old. I propose now to refer to some points of practical interest in connection with such of the well-known drugs as I am best acquainted with. I do not, of course, pretend to exhaust the applicability of any of them—that is a text-book matter—much less to say anything which has not been said before.

IODIDE OF POTASSIUM.—This is one of the most generally useful of all drugs, and the aphorism 'When in doubt try iodide of potassium' is a striking tribute to its many-sided therapeutic effects. To explain this many-sidedness is, however, no easy matter. We must, I suppose, grant it a specific effect upon gummata and some other syphilitic lesions; but no such explanation can be made to account for its activities in such widely differing conditions as emphysema, aneurysm, asthma, goutiness, rheumatism, and several others of minor importance. In seeking for a factor in connection with the drug which would throw some light upon the property of ubiquity, which, above all others, it seems to possess, one is immediately struck by the fact that a large proportion of the morbid conditions in which it is successfully employed are associated with high blood-pressure. This is true of those already mentioned; it is also true of chronic renal disease, of pains, especially where these are nocturnal, and of arterio-sclerosis. For whatever else it is, iodide of potassium is undoubtedly a powerful reducer of blood-pressure, and it is to this fact that we may probably attribute, not only its merits, but also its drawbacks, as a therapeutic agent. I have certainly never given it in asthenic conditions unprotected by nux vomica, or some other drug which tends to raise blood-pressure, without causing unpleasant symptoms.

Iodide of potassium is, under certain circumstances, a great reliever of pain. Pains of all sorts, whether

they be due to syphilis, goutiness, or what not, which are worse at night are almost invariably relieved and generally cured by the exhibition of this drug. It is, however, in aneurysm that its great value in giving relief from suffering is most manifest. The intolerable agony from which many of those suffer who are the subjects of this condition is more quickly and more lastingly relieved by this, than by any other form of medication. It is necessary to remember that in order to bring about this result the dose must be very large. It should begin at 20 grains three times daily, and may be increased cautiously to 30 grains. Sufferers from this disease generally show a remarkable tolerance for the drug.

In emphysema iodide of potassium is by far the most generally reliable agent. It cannot, of course, cure the condition; but it has a power in relieving the symptoms which is equalled by no other agent which I have employed. Emphysema is to the lungs what chronic interstitial nephritis is to the kidneys. The morbid process at work in the two cases is almost identical, and the effect upon the functions of the respective organs is practically the same. The iodide is much used, and rightly, in the treatment of renal cirrhosis, and it has always seemed strange to me that it should be so much neglected in emphysema. In out-patient practice I have had more expressions of gratitude from prescribing this drug in this condition than from anything else.

The number and severity of the attacks of

spasmodic asthma are more readily reduced by iodide of potassium than by any other drug. Asthma is, of course, a symptom and not a disease, and it is a symptom of many conditions which may be related to gastric, cardiac, nervous, and other disturbances; but whatever the origin, the effect is usually the production of high arterial tension. This being lessened by the drug, the symptoms generally yield. Asthma is often spoken of as if it were a condition or tendency which was much influenced by climate. This it may be, but it is certainly much more powerfully influenced by diet, and if this factor be carefully regulated in the direction of reducing, not only the meat foods, but also the whole quantity of food, the necessity for drugs of all sorts may easily disappear. It has fallen to my lot on more than one occasion to cut short an asthmatic attack by the simple expedient of clearing the gastro-intestinal canal by means of an emetic and an enema. This treatment is not popular with patients, who prefer, as a rule, to be given soothing and habit-inducing sedatives and narcotics, a preference which ought never to be indulged, except, perhaps, in extreme cases, by a hypodermic injection of morphine.

Asthma of gastric origin is very often due to asthenic dyspepsia, in which case HCl and strychnine should be given between the attacks, the iodides being reserved for the treatment of the attacks themselves. A drug which is most valuable in conjunction with HCl and strychnine under these circumstances is

arsenic. It seems to have a special effect in combating that form of gastric irritability which expresses itself in asthmatic ebullitions.

℞. Acid. hydrochlor. dil. ... ... ♏xx.
Liq. strychnin. ... ... ♏v.
Liq. arsenic. hydrochlor. ... ... ♏iv.
Aquam menth. pip. ... ... ad ℥ss.
M. Sig.: Ter die ex ℥i. aquæ post cib.

In this connection, it is perhaps permissible again to express a warning against giving liq. strychnin. with iodide of potassium. The tr. nucis vom. is nearly as useful, and there is then no danger of the alkaloid being precipitated. The combination of arsenic and iodide of potassium in asthma is an excellent one.

Iodide of potassium is said to be as useful in affections of the aortic valve as digitalis is in affections of the mitral. It is difficult to see whence this saying arose, because the action of the iodide is on the heart as a whole, and not on any particular portion of it. The salt affects the heart beneficially by dilating the peripheral vessels, and so lessening its labours. Of these peripheral vessels, the coronary arteries are among the most important. If these were originally constricted, and if, in response to the iodide, they dilate, an increased amount of blood is permitted to reach the cardiac substance, so that the nutrition of the latter is improved. The dilatation has the further effect of inducing a flushing of the waste

products, which are liable to accumulate in the muscle of fatigued hearts, and the action of the iodide itself in helping the solution and elimination of these products is most marked. It is also believed to lessen swelling and induration of the orifices and valves, an action which, having regard to its very marked absorbent powers, one can quite readily believe it to possess.

In the treatment of certain forms of cardiac complaint, where the heart is beginning to flag as the result of its efforts to overcome an increased peripheral resistance, the conjunction of the iodides with digitalis works admirably. The dose of digitalis should be small—certainly not more than 5 minims of the tincture to begin with, and preferably less. And it should be remembered, more especially in this connection, that in order to reduce blood-pressure, the dose of the salt should be what is usually considered large—namely, 10 grains or more. Small doses, such as 2 grains, tend rather to increase the intravascular tension than to lower it, and may therefore do an infinity of harm in most of the conditions which we have been considering.

Iodide of potassium is credited (Ringer) with the power of cutting short a common cold. It is both generally and locally a powerful absorbent, especially where glandular swellings are concerned, and it seems to have a particular power in promoting the absorption of simple swellings of the thyroid gland—simple in the sense of being neither cystic nor accompanied by other evidences of Graves' disease.

Iodide of potassium is the best remedy in petit-mal. On this form of epilepsy the bromides have practically no influence. Owing to the 'automatic acts' which are so liable to follow a fit of minor epilepsy—acts of pure animalism, uncontrolled by any higher centre—this type of the malady, though less arresting and alarming, is apt to be of much greater social importance than the ordinary type; for those who are not trained to observe generally overlook the small fit, and attribute the subsequent automatic act to pure wilfulness. As many of these acts constitute breaches of the criminal law, including even attempted murder, it is highly desirable that their cause, the petit-mal, should be recognised and treated. Very large doses of iodide of potassium will often lessen the number and improve the quality of these fits. There is, unfortunately, nothing which can be relied upon to bring about their cessation.

Luff[1] has a high opinion of iodide of potassium in the treatment of rheumatoid arthritis. He combines it in a cachet with carbonate of guaiacol, giving of each 10 grains three times daily, and insists that the treatment should be continued for at least twelve months. In addition, he lays great stress upon hygienic, dietetic and climatic details.

Such being some of its principal spheres of usefulness, what are the dangers and inconveniences of its employment? The only danger in connection with it—and it is a serious one—is presented by the fact

[1] *Practitioner*, July, 1905.

that its administration has been known to cause œdema of the glottis. Elsner and Huchard have both recorded cases of this kind, so that it is well to warn a patient to whom we are giving it for the first time to stop the medicine and report himself if any throat discomforts arise. Of inconveniences there are many. Perhaps the most pronounced is the occurrence of diarrhœa, either alone or accompanied by vomiting. This is not altogether infrequent, because the drug certainly has an irritating effect upon the gastro-intestinal tract, and should therefore be given with caution where this system is deranged.

A form of iodism which has often given rise to unfortunate mistakes is that which causes pain and swelling in the parotid gland, accompanied by other symptoms strongly suggesting mumps. Ignorance of this fact may easily cause a deal of useless trouble and alarm in a household, and if the iodide is not stopped the condition will persist. The commonest forms in which intolerance shows itself are in the production of sore gums, sore throat, running at the eyes and nose, and metallic taste in the mouth. These vary much in degree, and may generally be checked by the addition of a few drops of Fowler's Solution to each dose. Next in order of frequency come the skin manifestations of iodism. These are numerous—they may, indeed, take almost any form—but it is well to remember the purpuric form, especially when we are giving the drug to a rheumatic

subject; for if we forget it, it would be our duty to confine the patient to bed until some time after all signs of the rash had disappeared. True rheumatic purpura is just as liable to give rise to cardiac complications as acute rheumatism or chorea.

The best way of giving iodide of potassium is in cachet form, followed by a draught of water. If given in solution over long periods of time, it is well to add small doses of arsenic and nux vomica. The latter seems to prevent the occurrence of the mental and physical depression which some people experience when taking it for long. Sarsaparilla, liquorice and syr. pruni virg. are said to disguise its taste. According to some writers whose opinions are eminently deserving of attention, the iodide of sodium is more easily tolerated than the potassium salt. Professor Huchard, who has great faith in the iodides, insists very much upon this superiority of the sodium salt, which he seems to think is to be preferred on more grounds than one. That iodism in all forms is much less liable to occur with large doses—*e.g.*, 10 grains—than with the ordinary dose of 2 grains, is a matter of common observation. The late Sir George Macleod was in the habit of teaching that if symptoms of intolerance occurred the right course was to double the dose, whatever its original amount.

BROMIDE OF POTASSIUM.—My first object in referring to this valuable salt is to strike a note of warning concerning its use. It does not seem to be sufficiently

known that it has a very deleterious effect upon old people. Even in the ordinary doses of 10 grains three times daily, in a person over sixty, KBr is very liable to give rise to mental confusion, and if persevered with it may cause permanent impairment of the intellectual powers. The drug produces its effects presumably by lessening the blood-supply to the brain—hence its value in epilepsy—but in elderly people the lessening of this supply may mean thrombosis of some of the vessels, and consequent softening. With a drug which presents such possibilities we cannot be too careful, and it is a good thing to make a rule not to prescribe bromides after the age of sixty unless their effects can be very carefully watched.

Another fact in connection with bromides which is worth remembering is that their effect in epilepsy is said to be very much enhanced, so that smaller doses produce the desired effect, when the diet is kept free from common salt. This plan, first advocated by Richet and Toulouse in 1899, has proved very successful in the hands of many who have tried it.

In nocturnal epilepsy the action of the bromides is said to be augmented by adding 5 to 10 drops of the tincture of digitalis to the evening dose. Bromides being very rapidly eliminated, it is unscientific to give one large dose in the twenty-four hours where the attacks are not confined to the night, and even when they are, it is better to keep the patient under the influence of the drug during the day.

The addition of 3 or 4 drops of Fowler's Solution and 2 of tincture of nux vomica will prevent any unpleasant consequences from taking the salt, even over long periods of time.

An enema containing 30 to 40 grains of bromide of potassium is very useful in the vomiting which occasionally follows the prolonged administration of an anæsthetic.

DIGITALIS.—This is a drug which is probably used wrongly more often than it is employed rightly. It is used wrongly—that is, harmfully—whenever it is given as a matter of routine on the discovery of a valvular lesion. A well-compensated lesion, even at the mitral orifice, not only requires no digitalis: it resents it. It resents not only digitalis, but every other form of meddling. It cannot be too often repeated that a murmur in itself is no indication for therapeutic intervention, and of itself affords no legitimate excuse for serious prognosis. What we want to know about a heart is its capacity for carrying on the work of the circulation. So long as this is adequate, the noises which it may emit in the performance of its task become a matter of purely academic interest. Digitalis is used wrongly whenever it is exhibited without very special attention being paid to the state of the blood-pressure; for digitalis is a powerful raiser of blood-pressure; and to increase the pressure when it is already unduly high is to court terrible disaster. Thus, it should not be given in any stage of arterio-sclerosis, in atheroma, in

granular kidney, or in any condition, indeed, which is characterized by a slow pulse and full arteries. It is used wrongly when it is employed as a diuretic where œdema is absent, for its powers as a diuretic are confined to the cases in which this condition is present. It is used wrongly when, in the later stages of heart disease, œdema being present, it is persevered with after it has become evident that no good is to result from its use. Digitalis acts upon the myocardium and on the arteries, and when, as in such cases, the muscular tissue of the heart has become largely replaced by fibrous tissue, it is impossible for the drug to exercise any cardio-tonic effect, so that its sole action is that of constricting the peripheral arteries, and thereby adding to the burden of the already overtaxed central organ. It is used wrongly when it is given in aneurysm, for in this condition our object is to weaken the ventricular systole, not to strengthen it; to lower the blood-pressure, not to raise it. It is used wrongly when it is given in endocarditis or pericarditis, for in neither condition can it do any good, and, by raising the blood-pressure, it may easily do a great deal of harm. It is used wrongly when it is employed for the relief of palpitation, unless it is quite certain that this symptom arises from feebleness of the heart itself, and is not caused by obstruction in the systemic periphery. The palpitations of dyspepsia, of chlorosis, of nervous affections, and of the abuse of tobacco, are all aggravated by the exhibition of the

drug. It is used wrongly when by its means an attempt is made to overcome the tachycardia of Graves' disease.

The commonest error in connection with the employment of digitalis is its exhibition as a routine procedure whenever the existence of a morbus cordis can be established. A valvular lesion, it must be remembered, is a mechanical break-down which no line of treatment can hope to cure. Nature herself goes as near as is possible to overcoming the difficulty, and if by giving digitalis we interfere with her methods, we upset the balance which she has established, and by our ignorance and officiousness we provoke the very state of broken compensation which we are above all things most desirous of avoiding. The French teachers are never tired of repeating that 'une lésion d'orifice n'est pas une maladie du cœur,' and of insisting that it is not until the heart shows unmistakable signs of breaking down—until, that is, the myocardium fails to contract properly—that cardiac therapeutics come into play. Until that occurs the giving of digitalis is mere meddling, and meddling of a peculiarly pernicious kind.

It is said that digitalis should never be given in aortic regurgitation, because, by prolonging the diastole, it encourages a larger reflux into the ventricle. This view, though perfectly sound theoretically, requires some modification, not only in view of different effects of the drug according to the dose employed—a question which is considered later—but also because its employment is justifiable

and necessary in aortic regurgitation *of rheumatic origin*, when disaster threatens from progressing weakness of the myocardium. In aortic regurgitation caused by aortitis and other conditions associated with high arterial tension, it is, on account of its constricting effects on the peripheral vessels, never justifiable to administer the drug.[1]

Digitalis, like mercury, is well tolerated by children. It is exceptionally well borne by alcoholics, and in febrile conditions it may be given more boldly than under ordinary circumstances. In disordered states of the stomach it should be given with caution, because it has itself a tendency to irritate the gastric mucosa. A great deal has been written about the toxic effects of the drug, and while there is no doubt as to its tendency to cumulative action, the dangers thereof are usually much exaggerated. These dangers may be avoided without any risk of lessening the beneficial action of the remedy by suspending it every sixth day for a day or two, for the action will continue during the interval. The appearance of toxic effects is usually, but not always, heralded by a condition of the pulse which, though by no means peculiar to intoxication by digitalis, is nevertheless very suggestive of it. This pulse has been described as one of 'rhythmic arhythmia,' or 'regular irregularity.' Other names have been applied to it, such as the 'coupled pulse,'

[1] *Vide* 'Aortic Insufficiency,' *British Medical Journal*, August 4, 1906, p. 277.

and the 'pulsus bigeminus,' intended to indicate that it is regular for two (or perhaps three) beats together, a disturbance of the regularity then occurring, which immediately ceases, to return again at regular intervals. It might be expressed thus – – – – – – – – The supervention of a pulse of this nature while a patient is taking digitalis should lead at once to the cessation of the medicine, and its existence from any cause should suggest the utmost caution in prescribing the drug.

The exhibition of digitalis should always be preceded by a brisk purge; some writers even go so far as to say that the ground should be prepared for it by venesection. This is not necessary in the vast majority of cases, but the purgative, preferably in the form of a blue pill (5 grains), followed by a saline, should never be omitted, and it may be repeated from time to time with great advantage.

This refers to cases of ordinary severity. In the presence of symptoms of more than ordinary gravity, with much œdema, great arhythmia, and urgent nocturnal dyspnœa, where the liver is greatly enlarged and the urine very scanty, it is necessary to be much more drastic. In such cases it is quite useless to give digitalis until the portal radicles have been freely unloaded for several days in succession, and this must be brought about by what, under ordinary conditions, would be regarded as purgation of quite brutal severity. Some writers speak of 10 grains of calomel every night, others of 2 drachms of pulv.

jalap. co. three times daily, whilst a third set praise a saturated solution of magnes. sulphat. in ½-ounce doses hourly. I mention these merely for the purpose of insisting upon the fact that purgation must be very severe, and the more urgent the symptoms, the more drastic should it be. A point of great practical importance is that such cases, even when apparently at their last gasp, bear evacuants surprisingly well, so that one need never hesitate to push the remedy to the point of heroism. Where digitalis fails to act, or where it produces vomiting in the first few doses, it is generally a clear indication that the way has not been sufficiently prepared for it, and the purgation must be continued. During such continuance it is well to prescribe a hypodermic injection of morphine, ⅛ grain (not more) every night, and to exhibit liq. strychnin. (5 minims) and theobromine (15 grains), three times during the day.

Another fact which should not be forgotten in connection with digitalis is that the full benefit of the drug is to be obtained only when the patient is in bed. In slight cases it may, and often does, act when he is moving about, but smaller doses will bring about better results, and in a shorter time, if the recumbent posture is insisted upon. Another important point to be remembered is that its action, whether it be used as a cardiac tonic or as a diuretic, is very much enhanced by a pure milk diet. Stimulating foods interfere with its action. If it is desired to use stimulants, which it often is, carbonate of

ammonia is the best. Alcohol may be necessary, but it is usually better avoided.

M. Huchard, who amongst French writers is the chief exponent of the virtues of digitalis, says, at the close of an eloquent passage[1]: 'Le seul médicament cardiaque est la digitale.' Few English physicians would be disposed to agree with this, for in this country we place great reliance both upon caffeine and strychnia, but everyone will admit that in its own particular sphere digitalis stands alone and unrivalled. Now, what is this sphere? Well, it is sufficiently circumscribed, as may, indeed, be judged by the length of the *index expurgatorius* which has already been recited. The matter may be summed up by saying that digitalis is called for when, from whatever cause arising and whether or not a valvular lesion of any sort be present, there is weakness of the contractile power of the heart, provided that this weakness is accompanied—(1) by arhythmia, (2) by a lowering of arterial and a heightening of venous pressure. And, because of its diuretic effect, the drug is all the more urgently demanded when these conditions are attended by œdema, ascites, visceral congestion, and diminution of the urinary flow. This state constitutes the kingdom over which digitalis holds sovereign sway, but even here its power is limited; for, as I have already pointed out, when the cardiac muscular substance becomes replaced by fibrous tissue, as it ultimately does in all cases of long standing, the drug

[1] 'Nouvelles Consultations Médicales,' p. 434.

ceases to do good and may easily be mischievous. It is, nevertheless, safe to say that he who confines its employment, in the ordinary doses, to cases of the kind above indicated, will seldom do harm, and the good he will do will add greatly to his credit and satisfaction.

One of the chief difficulties in connection with the exhibition of digitalis is the unreliability of the ordinary preparations. The amount of active principle present in any given sample of leaves seems to vary more in the case of this drug than in any other, with season, soil, and other factors not easy to ascertain. Hence it is that of two samples of, say, the tincture, obtained from different druggists, one may be active and satisfactory and the other inert except for the production of vomiting and other unpleasant effects. This is no uncommon experience, so that before deciding that the drug cannot be tolerated it is wise either to change the form in which it is being used, or try the effect of sending the prescription to another chemist. It is often said that the infusion is more trustworthy than the tincture. This I believe to be true, but only when the infusion is freshly made. In France it is very generally held that a freshly-made *cold* infusion is one of the best means of giving the drug. About 3 grains of the powdered leaves are macerated in about 10 ounces of distilled water for twelve hours. The liquid is then filtered to prevent any solid particles obtaining access to the stomach; the amount is divided into 4 or 5

doses, which are taken at intervals during the following twenty-four hours. The very unpleasant taste of this infusion may be mitigated by allowing a few slices of lemon to macerate along with the digitalis, or by adding the juice of half a lemon to each dose. If for any reason the tincture should prove unsatisfactory, an infusion thus made may be appealed to with confidence.

The solid preparations of digitalis are seldom well tolerated under precisely those conditions when the drug is most urgently required, and I have long since ceased to employ them. The form in which the drug has, in my hands, proved most trustworthy is the preparation of the French Codex called 'soluté officinel de digitaline cristallisée,' of which the dose is 5 to 15 minims. It is quite easily obtained in this country, and is infinitely more reliable than any of the ordinary preparations. It was originally suggested by Potain, and its value has been acclaimed by nearly all the French writers since his time. Professor Huchard, who never uses any other preparation, declares that so certain is it in its action, that want of success with it necessarily means want of skill on the part of the prescriber.

The granules or pills of crystallized digitaline (Nativelle) are useful when the solution cannot be obtained, but in common with all the solid preparations, they have a greater tendency to upset the stomach than the above-mentioned solution.

Digitaline should not be administered hypodermi-

cally if it can be given with any prospect of success by other means, because even the best preparations are very liable to cause pain at the site of injection, which lasts for several days.

In ordinary doses (10 to 30 minims of the B.P. tincture) digitalis produces the general effects which we have just been considering. It quiets the heart's action, strengthens the systole, and prolongs the diastole. If it regularizes the pulse and slows the beats, it is doing good; if it does not produce these effects, it is either useless or harmful.

My own custom, however, except where symptoms of urgency are present, is to begin with much smaller doses than are usually prescribed. If I see a case where compensation is only just beginning to fail, in which the arhythmia is slight and there are no urgent signs, I prefer to give a dose of 2 minims, combined as follows:

℞. Tr. digitalis vel Sol. digitaline cristal. (Codex) ... ... ♏ii.
Caffeinæ citrat. ... ... gr. ii.
Tr. nucis vom. ... ... ♏ii.
Aquam ... ... ad ʒss.

M. Sig.: Every four hours for a week, then twice daily.

For reasons which appear later, I am in the habit of ordering with this mixture 1 grain of blue pill to be taken four nights a week. This practice I have found admirable in preventing failure of compensation by affording a slight but sustained tonic re-enforcing action. If persevered with (allowing,

of course, occasional holidays) it postpones for months, and even years, the dreaded days of asystole and intercurrent disease. If a patient is not ill enough to remain in bed at all costs, then he is not ill enough to be given—at first, at any rate—larger doses of tincture of digitalis than 2 to 5 minims: a dose which a considerable experience of out-patients has shown me not only to be highly efficacious, but, even when taken over long periods of time, to be entirely free from danger.

MERCURY.—Mercury has been called the sovereign remedy for all evils, and if we include its salts, it surely goes very near to justifying the title. The metal itself is the remedy *par excellence* in syphilis, in the earlier stages of which it has what we must assume to be a specific effect. It is also well to remember that in the so-called tertiary manifestations affecting the nervous system mercury will often prove successful when iodide of potassium proves fruitless. Of the methods of exhibiting the drug in syphilis nothing can compare with the inunction method as practised at Aix-la-Chapelle. A full account of this method and its accessories was given in a paper read by Dr. Lieven of Aix-la-Chapelle before the East Anglian Branch of the British Medical Association in April, 1904, and was published in the *Journal of Balneology and Climatology* in July of that year. Space does not permit me to enter into any detail concerning the method, but I should like to point out that it is one which any careful practitioner can carry

out, without sending the patient either to Aachen or to any of the numerous health resorts in this country where it can be obtained. It is so superior to any other means of introducing mercury into the system, so full of advantages, and so free from risks, that I do not hesitate to say that he who neglects it is not doing his best for his patient.

The expression 'alterative' which was applied to mercury by our forefathers must still be employed to denote a quality in the drug which we all recognise, but which in the present state of our knowledge we are unable to explain. We know that it is a germicide, that it is a cholagogue, that it is an absorbent; but we know, too, that it is something else which we cannot place in any category. It is to that something else that we appeal when we prescribe small doses of gray powder for a bottle-fed baby who, though being fed on lines which are quite satisfactory, is nevertheless not thriving. We may feel certain that there is no syphilitic taint, and yet we place absolute reliance upon the drug to bring about an alteration for the better in the child's nutritive process. It is to that same something which we appeal when we prescribe mercury for a patient who, though not ill, yet exhibits undoubted signs of a resisting power which is below the normal level. And the curious thing is that the appeal is so seldom made in vain. They are fond in France of using the terms 'parasyphilitic' and 'paratuberculous' to describe conditions which are admittedly neither syphilitic nor tuberculous, but

which are supposed to bear some relationship to these infections, and in both the favourite remedy would appear to be mercury. It would seem as if the vital soil of some individuals occasionally required digging over, as it were, with fresh material, in order to bring their powers of resistance up to the normal level, and there can be no doubt that that fresh material is more abundantly supplied by mercury than by anything else.

In connection with digitalis, I referred to the importance of preparing the way for this drug by a dose of mercury, followed by a saline. That is classical; it may even be described as canonical, inasmuch as it is everywhere recognised that digitalis is ineffectual until the portal radicles have been unloaded. But there is an action of mercury in connection with heart disease and digitalis which cannot be explained by the mere unloading of the portal radicles. Dr. Murray of Newcastle[1] has strongly advocated the practice of giving small doses of mercury for long periods of time to those afflicted with cardiac disease, and he relates a remarkable case in which the metal appeared to act not on the peripheral system only, but upon the heart itself. Whatever be the proper explanation of its action, I can confirm his observation that mercury in heart disease has a value, not only when given occasionally as an evacuant, but also when exhibited in small doses daily over long periods of time; that even apart from digitalis it maintains the functional

[1] 'Rough Notes on Remedies.'

power of the heart; and that, curiously enough, when thus given it seems to have little tendency to produce any symptoms of intolerance. So impressed have I been with its value in this direction that I now seldom prescribe a direct cardiac tonic without at the same time ordering one grain of blue pill to be taken at least three nights a week.

Of the salts of mercury, that which is probably the most highly esteemed is calomel. In large doses—*i.e.*, from 5 grains upwards—it is a very drastic cathartic; in moderate doses—*i.e.*, from ½ grain to 2 grains—it is a cholagogue; and in small doses—*i.e.*, from ⅛ to ½ grain—it is an intestinal antiseptic. In small doses it acts as a cathartic if it is given three times daily, and continued for four or five days. This method has many advantages over that of the single large dose, inasmuch as it allows the drug time to exercise its sedative influence—an influence which, though very marked, is seldom spoken of. In some cases the single large dose is essential—in delirium tremens, for example. The late Sir George Macleod used to declare that a full dose of calomel was infinitely the best treatment in this condition, and he seldom employed any other. Dr. Murray advocates the use of what most people would regard as enormous doses in acute mania, and he tells of some cases in which he has given as much as 30 grains of calomel to a maniacal patient with the happiest results. One case, 'after much profuse vomiting and purging, became as quiet as a child, and fell into a sound

sleep, to awake in a perfectly calm frame of mind.' There is much shrewd practical common-sense in this method, and it might be remembered with great advantage in emergencies similar to those which the author relates.

In minute doses calomel is of the greatest value in typhoid fever. It promotes intestinal antisepsis, prevents borborygmi, and renders the stools less offensive. I know of nothing to compare with it in the medicinal treatment of this condition (except, perhaps, Dr. Burney Yeo's chlorine mixture),[1] over which it has the great advantage of simplicity and tastelessness. Care should be taken in giving it, however, lest it should accumulate (as it sometimes does), and then exercise the effect of a single large dose. One-eighth grain three times daily is a sufficient dose, and this should not be continued for more than three days without an interval. It is usefully combined with 3 grains of thymol made into a pill with soap powder and a little spirit. If the bowels are thoroughly cleared at the outset by a dose of 2 grains of calomel, and if this pill is given cautiously during the first fortnight, the fever will generally take a benign course.

Another deservedly popular preparation of mercury is hydrargyrum cum cretâ. It is, as has already been mentioned, probably the best alterative for children,

[1] 'Manual of Medical Treatment,' second edition, vol. ii., p. 636.

especially when combined with rhubarb and soda, as in the following:

℞. Hydrarg. c. cret. ... ... gr. i.
Pulv. rhei ... ... gr. i.
Sodii bicarb. ... ... gr. iii.
M. Ft. pulv. Sig.: Nocte manoque.

Dr. Murray speaks highly of the following powder in the treatment of catarrhal jaundice:

℞. Hydrarg. c. cret. ... ... gr. i.
Pulv. cret. ... ... gr. i. vel grs. ii.
M. Ft. pil. Sig.: Ter die sumend.

'In no disease,' he says, 'are there more fanciful and absurd cures in vogue, but they are mostly useless and injurious. The one remedy I have faith in is the administration of gray powder until the gums are touched, and kept so for a month.' In order to avoid the difficulty of purgation arising from the use of the ordinary powder, Dr. Murray proposes the addition of the extra grain or two of chalk which he has found of signal benefit. In biliary colic Dr. Carter speaks highly of the value of succinate of iron (5 to 10 grains), which he and some of his friends have found more efficacious than any other remedy, both for the relief of the attacks and the prevention of their recurrence.

Mercury and its salts would appear to be the sheet-anchor of dermatological therapeutics. Calomel is, according to Ringer, infinitely the best remedy in that very troublesome condition, pruritus ani. He pre-

scribes an ointment—calomel 1 drachm to 1 ounce of lard—which he says seldom fails to relieve, and has never in his experience caused symptoms of absorption.

Pruritus pudendi is often quite successfully relieved by the following simple lotion:

℞. Sodii biborat. ... ... ʒi.
Ol. menth. pip. ... ... ɱv.
Aquam ... ... Oi.
M. Ft. lotio.

Another successful lotion in all forms of pruritus, especially pruritus ani when complicated with piles, is the following:

℞. Chloretone ... ... grs. x.
Glycerin } ... ... āā ʒiii.
S.V.R. }
Lotio carbol. 1 per cent. ... ... ad ʒiii.
Ft. lotio.

A useful ointment for the same trouble is thus composed:

℞. Chloretone }
Ext. conii } ... ... āā ʒi.
Cremor enthymol ... ... ad ʒii.

To this it is often advisable to add grs. viii. of calomel or hydrastin, or both.

Dr. John Reid, of New York, recommends pilocarpine in pruritus, whether local or general, whether there be any obvious lesion of the skin or not, and

whether or not the condition is caused by diabetes or other general disease. He recommends that it should be given by the mouth in doses of ¼ grain three times daily. Combined with $\frac{1}{120}$ grain of atropine, there is no sweating.

Mercurial salts are used in a great number of skin affections. In eczema, especially of the head, a favourite combination is:

℞. Hydrarg. ammon. ... ... grs. x.
Liq. carbonis deterg. ... ... ♏xx.
Vaselin vel lanolin ... ... ad ℥i.

M.

The yellow oxide is especially valuable in the treatment of pustular eruptions, and if applied early will often succeed in aborting a boil.

Inasmuch as the tendency to falling hair, more especially in women, is stayed by their use, mercurial salts would seem to exercise an influence on the nutrition of the hair follicles. A combination which frequently acts remarkably well in this condition is as follows:

℞. Hydrarg. perchlor. ... ... grs. xii.
Glycerin ... ... ℥iii.
Spts. rectif. ... ... ℥iii.
Olei rosæ ... ... ♏ii.
Aquam ... ... ad ℥vi.

M. Sig.: To be well rubbed into the roots of the hair night and morning.

Or the following:

℞.	Hydrarg. perchlor.	gr. i.
	Acid. carbol.	♏viii.
	Ol. ricini	ʒi.
	Ol. lavandul.	♏iii.
	Spts. vin. rect.	ad ʒi.

M.

When giving such a prescription it is always well to warn the patient that the treatment may seem at first to increase the trouble, the reason being that the moribund hairs are removed by the rubbing.

'Before leaving the subject of mercury,' says Dr. Murray, 'let me give one practical hint. If in doubt as to the amount of calomel or grey powder we shall give to a child, lay bare the nates, and if you find them thin, flat, and flaccid, give but a small dose. If, on the other hand, its little gluteal regions come together like the chubby cheeks of a cherub, you need have no fear of a free dose.'[1]

ARSENIC.—Arsenic was at one time regarded as almost a specific in most chronic cutaneous disorders, but experience has since shown that it is liable to be a double-edged weapon, which should be employed with great caution, inasmuch as it has an undoubted tendency to convert a chronic disorder into an acute inflammatory condition. In suitable doses it is a very useful general tonic, and in very small doses (1 to 2 minims of Fowler's Solution) it is an excellent tonic to the digestive organs, more especially the stomach. It is very efficacious in vomiting, especially the morn-

[1] *Journal of Balneology*, October, 1905.

ing vomiting of drunkards and those suffering from other forms of chronic irritation. It is probably the most reliable remedy for lienteric diarrhœa in children.

As a general tonic it has a special value in functional affections of the nervous system, especially when combined with nux vomica. I have found small doses of both to be more efficacious and better tolerated than large ones, a good combination being a pill containing $\frac{1}{100}$ grain of arsenious acid and $\frac{1}{10}$ grain of extract of nux vomica, three times daily after food. This pill should not be given in organic disease of the nervous system, because even the small quantity of nux vomica it contains is calculated to do harm.

As a digestive tonic, arsenic acts admirably when combined with citrate of iron and ammonia in those anæmic and chlorotic patients (and they are very numerous) who cannot take the stronger preparations of iron, such as the sulphate and the perchloride. A mistake which is very often made is to give chlorotics and anæmics these stronger preparations in the first instance, a very common and a very futile combination being magnesium sulphate and iron sulphate. It has several times fallen to my lot to see a patient who had failed to make any progress whatever with a prolonged trial of this, improve by leaps and bounds as soon as the following was substituted :

℞. Ferri ammon. cit. ... ... grs. x.
Liq. bismuth. ammon. cit. ... ... ʒii.
Liq. Fowleri ... ... ♏v.
Aquam ... ... ad ʒss.

M. Sig. : Ter in die post cib.

I do not at all underrate the value of purgatives in the treatment of this condition, but there is no special reason for including them in the mixture. They may be given independently in the form of a morning draught, or some other laxative, such as aloes or cascara, may be employed. Aloes is said to enhance the action of iron, and there certainly seems to be good ground for this opinion.

As the result of Dr. Murray's[1] enthusiastic advocacy, arsenic has of late been very much employed in two conditions on which it was formerly not supposed to have any influence—namely, diabetes and chorea. My own opportunities for trying it in diabetes have not been numerous, but where I have, it has certainly seemed to be a valuable aid in still further reducing the amount of sugar after this had been brought to an apparent minimum by diet and opium or codeia. The drug is certainly very well tolerated by diabetics, a fact which in a general way may be regarded as an indication for its use. It should not, according to Dr. Murray, be given until the sugar has been so much decreased by diet and codeia as seems possible. Arsenic will then not only still further reduce the amount, but it may be trusted in suitable cases to cause its entire disappearance, and to prevent its recurrence, even with an ordinary diet.

The treatment of chorea by large doses of arsenic was invented by an unqualified practitioner, who, on his death-bed, disclosed the secret of his success to

[1] 'Rough Notes on Remedies.'

Dr. Murray. The secret was this: 'that Fowler's Solution, in 15 to 20 drop doses, might generally be given to children from ten years old upwards for a few days without disturbing the stomach, and that so given it was an almost infallible cure for chorea within a week.' Dr. Murray's own observations confirmed the value of the drug so given, but he insists that two rules should be observed. The one is that the minimum dose should be 15 drops of Fowler's Solution; and the other, that the treatment should not be continued for more than one week.

A trial extending over several years enables me to speak with some assurance as to the efficacy of this method. It does good in the large majority of the cases; in some instances it is brilliantly successful, and in a few it fails completely. But I do not agree that it is essential that the treatment should be stopped on the eighth day. I have, indeed, found that to do this is often to lay down the weapon just as it commences to be operative; that it is, in fact, during the second week of large doses that the symptoms yield. It is, of course, necessary to call the parents' attention to signs of intolerance during this second week. I have found, further, that absolute rest in bed, combined with a diet from which fish, flesh, and fowl are rigidly excluded, greatly increases the prospect of cure by this, or, indeed, by any other method. Finally, I have found that the addition to the mixture of large doses (say 20 minims to 1 drachm or more) of liquid extract

of ergot, as suggested by Dr. Eustace Smith,[1] notably increases the percentage of cures.[2]

There are, however, some cases which obtain no benefit whatever from arsenic thus given, and although I have endeavoured to classify them, I am unable to suggest any point which, in examining a case, would enable us to suspect beforehand that it was one which would prove intractable to arsenic. One very practical clinical point, however, is that the cases which fail to respond to arsenic will nearly always (invariably, in my experience) react to trional. Trional will fail in a very large number of cases where, under circumstances which are identical as regards rest and diet, arsenic will succeed; but I have not yet come across a case where, arsenic having been found wanting, trional has failed to produce the most satisfactory results.

In dealing with chorea, my custom, therefore, is first of all to insist upon the recumbent posture and upon a purin-free diet. I then give a mild cathartic and immediately begin the arsenic treatment. At the end of a week I am guided by circumstances as to whether the arsenic is to be continued for another week, or trional (10 to 15 grains), three or four times a day, substituted. Very few disappointments will, I believe, await anyone who follows the same line. Arsenic is the most reliable remedy in habit-spasm.

[1] *British Medical Journal*, July 18, 1903.

[2] *Vide* 'Ergot and Arsenic in Chorea,' by Clive Rivière, *British Medical Journal*, February 25, 1905.

Jonathan Hutchison[1] regards arsenic as a specific in herpes of the lips and genitals—when recurrent. Herpes zoster is often provoked by arsenic, but as in zoster recurrence is very unusual, the drug does not act. It is the element of recurrence which constitutes the indication for its use.

In conformity, it is to be presumed, with its supposed beneficial effect in all affections of the skin, arsenic is sometimes given by the mouth for the cure of chilblains. There is no objection to this, but I cannot say that I have ever seen much benefit from its use. This troublesome affection is generally best treated by calcium chloride internally (*q.v.*), combined with local measures. The limb should have an extra wrap worn upon it, so as to encourage the circulation of blood in the part. The patient should be warned against subjecting those parts which show a tendency to this form of stasis to sudden alternations of heat and cold, because, for some unknown reason, these alternations seem to be much more active in producing chilblains than cold alone. Tight boots and tight gloves must be forbidden. As a local application, nothing can compare with the unguentum iodi (B.P.), especially when vigorous rubbing is employed. It stops the intolerable itching and causes the subsidence of the inflammatory process. For broken chilblains, touching with sulphate of copper and dressing with unguentum resinæ will rapidly effect a cure. For checking the tendency to chilblains—to forestall them, that is—iron, arsenic, and cod-liver oil are all useful, but

[1] *British Medical Journal*, July 30, 1887.

calcium chloride is invaluable. Exposure of the parts, to radiant heat, as by Dowsing's lamps, will not only assist in checking the tendency: it will also bring about absorption of the unsightly swellings which chilblains so frequently occasion. Von Buiz (*Therap. der Gegenwart*, January, 1906) gives the following as an infallible remedy for chilblains:

℞. Calcinat chlorinat (B.P.) ... ... ʒi.
Paraffin ... ... ʒix.
M. Ft. ungt. Sig.: To be well rubbed in at night.

BISMUTH.—In connection with the internal administration of this most excellent gastro-intestinal sedative, most of what is necessary has been said in Chapter II. I revert to the subject here to emphasize one or two points in relation thereto. It was at one time believed that the value of the powder form of the drug in cases of gastric ulcer was due to a mechanical action. The powder was supposed to spread itself out on the floor of the ulcer, and thus afford a protection against the action of irritants. Although there seems to be very little to support this theory, I am quite of opinion that the solid forms are preferable to the liquid, and that of these the subnitrate is infinitely the most useful and reliable. I have always found it superior both to the oxide and carbonate. The liquor bismuth et ammonii citratis is the best of the liquid forms, and, as it is practically tasteless, it can be so combined as to make an agreeable mixture. Bismuth in any form taken over long periods of time

is liable to cause (1) a garlic odour in the breath, (2) increased pungency of the axillary secretion, and (3) pruritus and irritation in the vicinity of the anus. These are all very inconvenient to the patient, and the drug should be stopped as soon as any of them arise.

Bismuth is also valuable when used externally. Sir Thomas McCall Anderson speaks in the highest terms of the following ointment as a sedative in eczematous and other irritating eruptions, and my own experience fully bears out his recommendation:

℞. Bismuthi oxid. ... ... ʒil.
Acid. oleic. ... ... ʒii.
Ceræ alb. ... ... ʒvi.
Vaselin ... ... ʒii. ʒii.
Ol. rosæ ... ... ɱi.

M. Ft. ungt.

Another soothing combination containing bismuth is the following cream:

℞. Zinci oxid.
Bismuthi carb. } ... ... āā ʒi.
Glycerin. carbol. ... ... ʒii.
Glycerin. amyli ... ... ʒi.
Lin. calcis ... ... ʒi.

M. Ft. cremor.

A useful lotion of similar composition is:

℞. Bismuthi carb.
Calaminæ
Mucilag. tragacanth. } ... ... āā ʒi.
Aquæ calcis ... ... ʒiv.
Aquam ... ... ad ʒi.

M. Ft. lotio.

FORMALIN.—This is an aqueous solution (about 35 per cent.) of formic aldehyde, which has very considerable bactericidal and preservative powers. In watery solutions, even when these are weak, it acts as an irritant on the skin and mucous membranes. When combined with glycerine, however, the irritant effect seems not to occur. Jordan [1] has shown that in a combination of 1 to 4 per cent. (formalin, 1½ to 5 minims; glycerine, 2 drachms) it is a most valuable local remedy in aphthous stomatitis, ulcerative stomatitis, and septic throats, and that so used it produces no caustic effect whatever. Employed similarly, it is a convenient, painless, and effective application in parasitic diseases of the skin.

The tablets which are sold under the name of Formamint present a very convenient and portable method of applying formalin to the oro-pharyngeal region. These tablets are agreeable to the taste, and will therefore be readily sucked by children who cannot be induced to submit to any other kind of effective medication. The tablets are composed of formic aldehyde in combination chiefly with sugar of milk. Their internal administration has been recommended in the treatment of flatulent dyspepsia, and it is not difficult to believe that they would do much to prevent fermentation in cases in which the pylorus was obstructed.

Formalin is given internally in two other forms, urotropin and helmitol, both of which produce a very

[1] *Lancet*, 1901.

decided bactericidal effect upon the urine. Urotropin is produced by the action of ammonia on formalin, and is given in 10 to 15 grain doses. It tends to check ammoniacal decomposition, probably owing to its bactericidal action. This action is very decided, and the employment of urotropine has in consequence become almost a routine measure in typhoid fever—not so much for its effect upon the patient as for its power of disinfecting the urine before it leaves the body, and thus helping to provide against the spread of the disease. Urotropin is also used with great success in the cystitis due to the Bacillus coli communis.

Helmitol is a combination of formalin with citric acid. It is more efficacious than urotropin in certain cases. Urotropin may always be trusted to disinfect an acid urine, but its action on a urine which is alkaline is liable to be disappointing. If the alkalinity is due solely to the presence of bacteria in the bladder, then urotropin may be relied upon to check the decomposition, but if the alkalinity is due to other causes the effect of urotropin is doubtful. Helmitol, on the other hand, will render acid a urine which is alkaline from any cause, and will at the same time disinfect it. As a general rule, therefore, urotropin should be given when the urine is acid, and helmitol when it is alkaline.

CHLORIDE OF CALCIUM.—This drug has been shown by A. E. Wright to increase very notably the coagulability of the blood, and it has in consequence been much and successfully employed in all exudative

conditions, more especially of the skin. Chilblains, urticaria, erythema, and purpura, are all much ameliorated by its use, and the tendency to the formation of blisters (as from rowing, cricket, and the like) is very much lessened during the time the drug is being taken. Savill[1] has extended still further the practical value of the salt by showing that many cases of itching are caused by a species of subcutaneous exudation which disappears under the treatment by calcium chloride, and he has effected some very noteworthy cures by exhibiting the drug in cases of pruritus pudendi and pruritus ani which had for years resisted every other form of treatment.

Apart from calcium chloride, the best symptomatic remedy for urticaria is magnesium sulphate; for erythema, quinine.

Mayo Robson and others have utilized the power of calcium chloride in coagulating the blood for the purpose of providing against hæmorrhage, or of checking it when it occurs. Thus it is given to women for some days before expected childbed, and to patients on whom it is necessary to perform operations in which bleeding is difficult to control. The dose of calcium chloride may reach as much as 1 drachm three times daily without fear of ill effects, but it is usual to begin with smaller doses. It has an unpleasant taste, which is, however, sufficiently well disguised by extractum glycyrrhizæ liq. and aqua menthæ piperitæ.

[1] *Lancet*, August 1, 1896.

Savill,[1] in giving the following, says: 'Valuable for pruritus from any cause. Should be given three times a day after meals in gradually increasing doses. In hæmorrhage, uterine or pulmonary, should be given every two to four hours.' It is quite palatable.

℞. Calcii chlorid. ... ... grs. xx.
Tr. aurantii ... ... ʒii.
Aquam chlorof. ... ... ad ʒi.
M.

CITRIC ACID AND THE CITRATES.—The work done by A. E. Wright on the subject of the coagulability of the blood revealed the fact that, while calcium chloride notably increases this coagulability, citric acid produces the opposite effect. In doses of ½ drachm three or four times daily the acid causes a disappearance of the calcium salts from the plasma, thus rendering the blood much more fluid than it was previously. I have already referred to the therapeutic application of this fact in goutiness, and in skin eruptions such as acne and furunculosis, but I wish here to refer to another use which may be made of this property of the acid. In mitral stenosis the severe symptoms arise from the difficulty with which the blood passes through the narrowed mitral orifice. If the blood is viscid, the difficulty is increased; if it is fluid, the difficulty is diminished. I have now for some months been using citric acid in all cases of mitral stenosis, and although I am unable at present

[1] 'A System of Clinical Medicine,' vol. i.

to speak positively, it has seemed to aid in relieving the back pressure upon which the symptoms depend.

The property of decalcification which is possessed by citric acid in the case of the blood is possessed by citrate of sodium in the case of cow's milk. Artus and Pages had shown that milk which had been treated with oxalates and fluorides did not curdle with rennet, and this they attributed to the fact that the lime salts had been precipitated by the action of the oxalates and fluorides. A. E. Wright[1] followed up this matter and demonstrated that milk-clots were formed in two different ways: (1) a firm clot, as with rennet, or with the human gastric juice; and (2) a loose clot, as by the action of an acid. He further showed that if the calcium salts be precipitated from the milk, the subsequent addition of rennet produces a clot of the second type, and not of the first. These facts he applied to the artificial feeding of infants, which is liable to present difficulties, mainly owing to the formation of indigestible clot as soon as the milk enters the stomach. Oxalates and fluorides being poisonous, Wright tried other precipitants for the calcium salts, and found that citrate of sodium answered all the requirements. The practical outcome of this is that if 1 grain of the citrate be added to each ounce of milk, not only may the danger of the formation of clot be entirely disregarded, but there is not, according to Wright, any necessity whatever of

[1] *Lancet*, July 22, 1893; Transactions of the Royal Medico-Chirurgical Society, vol. xxxv.; see also Poynton, *Lancet*, August, 1904.

diluting cow's milk for infant feeding so as to approximate it to ordinary mother's milk. This last point is very important, and though at first sceptical, many observers have been found to give unqualified adhesion to Wright's views. The addition of citrate of soda is most valuable in insuring digestion of the large quantities of milk which are usually prescribed in the rest cure.

SARSAPARILLA.—This very old remedy has recently been much discussed in connection with tuberculosis and other chronic wasting and debilitating diseases. In the hands of Dr. Carter of Liverpool,[1] it has produced most excellent results, and many of those who have been moved by his convincing advocacy to try it speak with enthusiasm of its efficacy. The preparation which Dr. Carter recommends is the decoctum sarsæ compositum concent. The doses should be large and frequently repeated—that is, about ½ ounce three or four times daily. It is well to be careful of such large doses—at any rate, at first—for they not infrequently give rise to gastro-intestinal disturbance. If, however, small doses are administered at the outset, they may be increased gradually without fear of intolerance. There does not seem to be any explanation as to how this remedy produces its effects, but that it is—in some cases, at any rate—capable of bringing about results which are little short of marvellous there is no longer reason to doubt. Sir Felix Semon,[2] Sir Clifford

[1] *Liverpool Medico-Chirurgical Journal*, January, 1906.

[2] *British Medical Journal*, January 13, 1906.

Allbutt,[1] and others, have recently strongly testified to its value in syphilitic cachexia where mercury and iodides are unavailing.

[1] *British Medical Journal*, March 24, 1906.

CHAPTER X.

INSANITY.

The subject of insanity, though one which cannot properly be included in any category of minor maladies, is emphatically one of those to the understanding of which the ordinary text-book contributes but little. Some of its practical aspects seem, therefore, to come within the scope of this volume.

The most important thing to realize in connection with insanity is that it is a symptom and not a disease. We have to divest our minds of the idea that there is some special obscurity in connection with it, an obscurity of a different character from that which still surrounds such conditions as cancer, whose ætiology is still unfortunately hidden from us. Mental aberration is in many cases as much a physical condition as leukæmia or pernicious anæmia, inasmuch as it is due to some alteration either of the cortical cells themselves, or of the blood which nourishes them. Our ignorance of the subject and its difficulties, together with the fact that the symptomatology is almost purely mental, have combined to surround this department of clinical medicine

with an atmosphere of mystery from which it is to the interest of everyone that it should be emancipated. The first step towards that emancipation is the recognition of the fact, which is no longer in doubt, that the great majority of cases of acquired mental alienation are due primarily to physical causes, the discovery of, and differentiation between, which are necessary to their ultimate removal.

This atmosphere of obscurity has had for its result the almost complete neglect of the question by him who is in a sense the most favourably placed for studying it in its earlier, and therefore its most remediable, stages—namely, the family doctor. It is no disparagement to the excellent work done by alienists to say that inasmuch as they seldom see the cases until the malady is pronounced, they are less favourably situated than others for observing and counteracting the early symptoms. It is no part of my purpose to enter into the diagnosis and treatment of mental diseases; rather do I wish to emphasize the position that, ignorance of the accepted classifications is no barrier to the appreciation of the fact that a departure from the normal is present in an individual case; nor need it deter the observer from undertaking an intelligent clinical investigation into the physical causes by which this departure has conceivably been provoked.

Insanity is still too often regarded, as in former times all disease was regarded, as a visitation of Providence, in the presence of which medical inter-

ference is not only impotent, but impious. The obscurities of heredity, degeneracy, and other difficult social problems, rise up to lend support to this attitude. But while the power of such influences is neither to be gainsaid nor minimized, it seems necessary to insist that they are for the most part merely predisposing causes which might be successfully kept inoperative if the laws of normal development and healthy animal existence were more frequently insisted upon, for purposes both prophylactic and therapeutic. That a person who shows signs of insanity has had an epileptic father and an alcoholic grandfather is not a sufficient reason for abandoning him to the fate with which he is threatened. It is, however, a very good reason for inquiring into his habits and mode of life, for subjecting him to a minute clinical examination—for investigating everything, in fact, which may reveal any disturbance which, though slight in itself, may, nevertheless, be sufficiently powerful in the predisposed, reflexly to upset the balance of higher centres.

In other words, we should learn to look upon insanity not as the result of causes which are necessarily subtle, remote, and irremediable, but as a state of the nerve cells to the production of which many causes have contributed. Some of these, the exciting, may be, and often are, recent and remediable, and the discovery and removal of these (a matter which is definitely within the sphere of the physician as distinct from the alienist) may well make all the difference between a mere transient

melancholia and a state of matters which urgently demands institutional treatment.

In conducting a clinical examination it is essential to observe a definite routine, and to make careful notes of the findings as the examination proceeds. Necessary as this always is, from the point of view of overlooking nothing, where there is any question as to insanity, it acquires, as will appear later, a very special importance, because of the fulness and accuracy in the matter of detail which are necessary to the filling in of a lunacy certificate.

The system which should first engage the attention of the examiner is, of course, the nervous system; and here, to prevent oversights, it is well to adopt a regional method, beginning with the head. After careful inquiries as to memory (especially for recent events), sleep, and pain, search should be made for physical signs. Having observed and noted the presence or absence of general facial asymmetry, the eyes should engage the most earnest attention. Both squint and ptosis are important, and in slight degrees, easily overlooked points. The size and equality of the pupils, and their reaction to light and accommodation, must be carefully tested, in each eye separately.

Nystagmus, even when present only on extreme lateral deviation, is very significant, and the search for it should on no account be omitted.

The detection of refractive errors, especially those which are moderate or slight in degree, is of paramount

importance (*vide* Chapter IV.), and if there should be any doubt whatever on this point, the question should be referred to a specialist. There is no more fruitful source of grave disturbance of the higher centres than those slight ocular defects which, while not impairing the visual power, nevertheless impose a constant strain upon the ciliary muscle, and lead to exhaustion of the nervous system.

The fundus on both sides should be examined for commencing atrophy of the disc, for hæmorrhages, or for any other abnormality calculated to throw light upon the patient's condition.

Defects of articulation may be evoked by making the patient say difficult words, especially those involving the lips and tongue, such as 'parallelogram,' 'laryngological,' 'anæsthetical,' 'preliminary,' and sentences such as, 'The Irish artillery extinguished the conflagration.'

The state of the facial muscles is best ascertained by such directions as 'Screw up your eyes,' 'Show me your teeth,' 'Put out your tongue,' 'Blow out this light'; and while these directions are being carried out the examiner should be careful to note the existence of any tremor, and should study the relative strength of the contractions on the two sides.

Before leaving the face, the state of the mouth must be examined. Oral sepsis is a frequent and well-recognised cause of reflex irritation, so that if present in any degree, however slight, great care should be taken to detect and remove it.

In the upper limbs, the force of the grasps on the two sides should be compared. Tremor and involuntary movements are best elicited by making the patient extend both arms together, and spread out the fingers of the two hands. He should then be directed to touch the tip of his nose with each forefinger separately, the eyes being closed. This will elicit intention-tremor, and ataxy. The condition of the supinator and triceps jerks should be tested.

In the lower limbs, any abnormality of gait or pose should be noted, and the muscles should be examined for wasting or rigidity. The patient should be made to stand with his heels and toes together, and close his eyes. If this, which is called Romberg's test, causes swaying or reeling, it indicates the presence of static ataxy. The knee-jerks must be tested, if necessary, with what is known as reinforcement—that is, by causing the patient to clasp his two hands together, and then to make an effort as if to pull them apart. Ankle clonus, if present, is very important, because it affords unequivocal evidence of the involvement of the pyramidal system. The same may be said of what is known as Babinsky's sign—namely, a definite extensor response of the great toe to plantar irritation.

The sensibility as to touch, pain, and temperature, should also be investigated, though it must be confessed that this is an ordeal which is apt to be a trying one where we have a stupid, inattentive, or morose person to deal with.

Such an examination of the nervous system derives its importance from the fact that it will reveal the existence of any physical sign of organic disease which may be present in that system, and as these physical signs afford very valuable confirmatory evidence of mental instability, their aid in rendering a certificate convincing cannot be overestimated. Moreover, the nature of the physical signs, when present, will enable us to place the mental symptoms in their proper category. The discovery of nystagmus and intention-tremor, for example, will prevent us from attributing to mere hysteria, an emotional instability which is really due to disseminate sclerosis; in the same way that a slight 'perversion of the ego' will acquire a peculiarly sinister significance if we find it associated with unequal pupils and a knee-jerk which is either absent or exaggerated.

But, although I desire to emphasize the importance of deriving all possible assistance from the examination of the nervous system, my present purpose is rather to insist upon the responsibility of derelictions of duty on the part of other systems in bringing about the state of matters which we are considering. Dr. Graham Crookshank[1] says: 'No case of neurosis, neurasthenia, or borderland insanity should ever be treated without the most careful reference to the condition of eyes, ears, nose, mouth, heart, lungs, stomach, bowels and pelvic organs.' The questions of ocular and

[1] 'The Management of Early, Transitory, and Ill-defined Mental Disorders,' *Clinical Journal*, January 25, 1905.

nasal defects have already been considered (*vide* Chapter IV.). The importance of attention to the state of the mouth has been mentioned above, and may be here reinforced by another quotation from Dr. Crookshank: 'Attention to oral hygiene is of vast importance. It is not an exaggeration to say that cases of alcoholic insanity have been cured by the dentist.' And not alcoholic insanity only, but other forms which are due to absorption of toxins from the mouth, and to digestive disturbances consequent upon deficient mastication.

The responsibility of the intestinal tract for the manufacture and distribution of poisons which cause functional derangements in the central nervous system is now so well recognised that it scarcely needs a reference. Chronic constipation vies even with syphilis and alcohol in the multiplicity of its morbid consequences and their magnitude. Among these consequences mental troubles occupy the foremost place, and there can be no doubt that if patients in the early stages were adequately purged of their toxins, the number who ultimately come to certification would be considerably reduced. Robert Jones[1] very properly deprecates the advice so often otiosely given by the uninstructed, that patients suffering from incipient insanity should travel. Certainly, aimless travel is not only useless, but dangerous; but travel undertaken with a view of reaching a spa with

[1] 'How to Treat a Case of Insanity,' *Lancet*, December 26, 1903.

purgative waters, such as Carlsbad or Brides-les-Bains, is a very different matter. It is quite certain that an annual course of treatment at such a place constitutes the salvation of many people who would otherwise from time to time be threatened with mental instability, a fact which is worth remembering when we have a difficult patient or recalcitrant relations to deal with.

Derangements of the reproductive organs, especially in women, are perhaps the most fruitful cause of those slight departures from the normal to which the name 'borderland' is applied, and no pains should be spared to discover and rectify any defect which may exist. Adolescent insanities in girls often begin with constipation, anæmia, and amenorrhœa.

In the cardio-vascular system the most important matter to investigate is the condition of the blood-pressure (*vide* Chapter V.). Slight mental troubles are very often associated with, if, indeed, they are not directly caused by, an increase of the blood-pressure. This factor, as being remediable in its earlier stages, is of more importance to the investigator than the state of the heart itself, more especially as cardiac troubles are so often secondary to an increase of peripheral resistance.

Finally, it should not be forgotten that delirium due to typhoid or pneumonia has not infrequently been mistaken for acute mania, a fact which emphasizes the importance of a thorough physical examination, not only in slight and borderland cases,

but also in the case of those who are demonstrably and grossly insane.

There is yet another advantage of approaching every mental case as though it were one of physical derangement, and that is the effect produced upon the patient. A medical man is frequently asked to adopt 'a ruse' in order to see the patient—by announcing himself as the greengrocer calling for orders, the man who winds the clocks, or something equally absurd. To this he should never consent. He should, on the contrary, insist upon appearing in his true capacity, and lose no time in explaining to the patient that the object of his visit is to examine into the latter's health. If, now, the method of examination is physical, the patient's confidence is at once secured, and he is far less liable to suspect that the object of the visit is 'to send him to an asylum' than if some method is adopted with which he is unfamiliar. Nothing, in these cases, is ever gained by deception.

If physical examination succeeds in eliciting some recognised cause of insanity, the removal of which affords a reasonable hope of rapid improvement, then the propriety of undertaking the treatment at home should be duly considered. The question of home *versus* institutional treatment is a difficult one, which can only be satisfactorily decided in view of all the circumstances of a particular case. On the one hand, there is the very natural dislike of the stigma attaching to asylum treatment, and the fear of the

consequences which such a stigma may entail even upon unborn generations. Moreover, institutional treatment is expensive, and expense may be a very serious consideration, especially where the patient happens to be the bread-winner. On the other hand, it is a sad and significant fact that the dislike of an asylum, natural, and in a sense laudable, though it be, is responsible for many cases reaching the incurable stage which might have been cured had they been subjected to expert treatment in the first instance. The treatment of insanity is a very special matter, and general practitioners would be well advised if they refused to undertake it unaided, unless they felt very sure that the particular case was well within their competence. If home treatment is strongly desired by the relatives of the patient, the best course to pursue is to refer the whole question to an experienced alienist, under whose advice the practitioner may carry out the home treatment, should this be decided upon. Unless he has had special experience, the family doctor should make it a rule to refer the question of the treatment of all cases of insanity to an expert, in the same way and for the same excellent reason that he habitually refers all cases requiring abdominal section to a practising surgeon. The cases suitable for home treatment are given by Robert Jones[1] as follows: 'Forms of insanity referred to malnutrition, such as those caused by excessive lactation, or the conditions accompanying

[1] *Lancet*, December 26, 1903.

the puerperal state; transient toxæmic states, such as those due to drink or drugs, and the temporary insanities of young persons; quiet and harmless weak-minded cases; and certain cases of general paralysis in the last stage, whose friends are desirous of avoiding the much-felt stigma when a father or husband is said to have died in an asylum.'

When no doubt exists that a person is sufficiently insane to demand or warrant his removal from home, the proper course to pursue depends upon whether that person is a 'private patient' or a 'pauper'; whether, in fact, he is sufficiently well off to contribute something towards his keep in an institution, or whether, removed from his means of livelihood, he is penniless.

In the case of a 'pauper,' notice of the fact and circumstances should at once be given to two functionaries—namely, the parish doctor and the relieving-officer. No harm is done by notifying yet a third—namely, the head of the police in the immediate district. As soon as these officials have received proper intimation the responsibility of the ordinary medical man is at an end, except that he may be called upon by the magistrate to furnish particulars. These functionaries are bound by Act of Parliament to take the necessary steps within three days of receiving the notice.

In the case of a private patient, there are two methods of procedure: (1) An urgency order, and (2) an ordinary petition, with statement, two medical certificates, and a justice's order.

1. Urgency orders should only be employed in cases which are in reality urgent. They do not obviate the necessity for the ordinary certification; they merely postpone it for a few days, and they cause a great deal of extra trouble to all concerned.[1] An urgency order consists of—(*a*) an order signed by one person, who must be an adult friend, preferably a relative of the patient; and (*b*) a medical certificate signed by a qualified practitioner, preferably the usual medical attendant of the patient. These two—the relative and the doctor—must have seen the patient within two days of the time that each signs his respective document, and they must not be related to one another. The order holds good for seven days, within which period the ordinary petition, with two medical certificates and a justice's order, must be provided. The medical man who signs the urgency certificate may also sign one of the subsequent medical certificates, and he may frame the latter on the same interview, and even couch it in the same language as the urgency certificate, provided that the ordinary certificate is furnished within seven days of the examination of the patient. The manager of an institution, if he has room, will admit a patient on an urgency order forthwith.

Forms for urgency orders and ordinary certificates ought always to be in the desk of every medical practitioner. They may be obtained from Messrs.

[1] 'Insanity in Everyday Practice,' second edition, E. G. Younger (Baillière, Tindall and Cox).

Shaw and Sons, Fetter Lane, E.C., or from the authorities of any licensed house, mental hospital, or asylum.

2. In the case of a private patient, the procedure, although it may at first sight seem complicated, is in reality very simple. When it is decided that institutional treatment is necessary, the superintendent of the selected institution should be communicated with without delay. If the practitioner has not any certificate forms in his possession, the said superintendent will supply all that may be necessary. The nearest relative (preferably the father, mother, husband, or wife of the patient) is supplied with certain forms, which must be duly signed, and it is in most cases desirable that the medical man should assist at the signing.

Two medical certificates are necessary, one of which ought to be signed by the medical practitioner in ordinary attendance upon the case. The other may be signed by any medical man, provided he is neither related to the patient nor in any way connected with the institution to which the patient is to be sent.

Inasmuch as the law demands that one certifier shall be the usual medical attendant, and requires reasons to be given if this be not the case, it is obvious that anybody may be called upon to fill in a lunacy certificate at any time. There was at one period considerable danger in certifying an insane patient. Some of these people are very litigious, and are apt to bring actions against all those concerned in their detention if they should ever be set at liberty.

There is now no fear of any difficulty arising, if only the certifier will take ordinary care. The Act of 1890 protects him fully, even abundantly, if he will realize what his responsibilities are in connection with the making out and the signing of the certificate. First, then, the certificate should be drawn up with the feeling that it is a document upon which the certifier may conceivably, at some distant date, be cross-examined in open court. Although, as has just been pointed out, there is no serious danger of this, yet it is always well to be provided against every possibility, and if every certificate were drawn up with the spectre of a cross-examining counsel at the writer's elbow, it is very certain that not a single case would ever come into court.

It is not sufficiently appreciated that if any proceedings are taken against a person for signing a lunacy certificate, such proceedings may be stayed upon summary application to the High Court, or to a judge thereof, if the court or judge is satisfied that there is no reasonable ground for alleging want of good faith or reasonable care (Lunacy Act, 1890, Section 330, subsection).

This subsection represents the medical practitioner's Magna Charta in matters relating to the certification of the insane. Section 330 protects him from losing an action if he has acted in good faith and with reasonable care, but it does not prevent proceedings being instituted. The subsection goes further, and provides means for stopping an action if there is no

ground for alleging want of good faith and reasonable care.

Now, in order successfully to invoke the aid of this subsection, the certificate must be so framed as to impress the judge that extreme care has been taken in every detail. Medical men are in the habit of inditing a lunacy certificate much in the same spirit as that in which they indite a certificate for a club, stating the inability of one of its members to follow his ordinary employment. It should be remembered, however, that there is an essential difference between a lunacy certificate and any other medical certificate. This difference resides in the fact that whereas in the latter the doctor's opinion as an expert is accepted; in the lunacy certificate it is not. It suffices for a qualified man to write, 'In my opinion this person is suffering from pneumonia,' but it does not suffice for him to write, 'In my opinion this person is suffering from insanity.' The club authorities unhesitatingly accept the one, the Lunacy Commissioners peremptorily reject the other. Successfully to frame a lunacy certificate it is necessary to include facts—not deductions, but facts—which will carry conviction of the patient's insanity to a person, or a set of persons, who have never seen the patient.

Extreme care and due elaboration of detail are thus essential, not only to the validity of the certificate, but also to that immunity from vexatious legal proceedings which the Act of 1890 seeks to confer on the conscientious certifier. For the certificate must not

only convince the authorities of the fact that the patient is insane, but it must also be capable of convincing a judge of the High Court that so much particularity has been exercised in its framing, that there is no ground whatever for alleging 'want of reasonable care.'

The examination of a supposed lunatic should therefore be approached with a grave sense of responsibility; and the first thing to remember is that notes should be carefully taken at the time of the examination, and as carefully preserved thereafter. This is a precaution which should never, under any circumstances, be omitted. It is always well to seek an interview with one or more responsible members of the patient's household or family before seeing the patient, in order that some idea may be gleaned as to the form of insanity which may be present. The full names and addresses of such persons should be carefully noted, together with their relationship or nature of connection with the patient. Facts—not beliefs or opinions—which are communicated by them are not absolutely necessary to the due execution of a certificate, but they materially strengthen the document, and should therefore be studiously elicited, carefully sifted, and accurately recorded.

The interview with the patient should be approached in much the same spirit as the student approaches the clinical case given him for report at his final examination. Nothing should be omitted which can be

elicited. Age, occupation, family history, past illnesses and attacks, should be accurately taken down in writing, and every abnormality which a thorough physical examination has brought to light should be recorded, whether such an abnormality may seem to the examiner to have an immediate bearing upon the case or not. It is infinitely better to make the report too full than to leave it too meagre.

When the time comes for drafting the certificate the great point to be borne in mind is that it is facts which are wanted, and not conclusions; evidence, and not a verdict. The conclusion or verdict is implied—namely, that the person is insane; but the facts, the evidence upon which the conclusion or verdict is reached, must be set forth clearly and in detail. It is well to avoid the use of technical terms, such as 'delusion,' 'illusion,' and 'hallucination,' because one, at any rate, of the people whom the certificate is intended to convince may have a very hazy idea as to the meaning of such terms. Attention to the ordinary rules of syntax, with clearness and accuracy of statement, being essential, it is advisable to employ the present tense of the indicative mood, as ambiguity is then less liable to creep in. Thus, the certifier should begin his sentence with 'the patient states' this, or 'he does' that, instead of, as is too often done, using the present participle—*e.g.*, 'going into the street in her nightgown.' The completed certificate should be a reasoned, orderly, coherent document, bearing on its face the fact that it is the work of an

educated man, who has brought to its composition the desire succinctly to convey positive information to responsible people who have no other means of forming a conclusion upon a matter of the highest importance.

It is scarcely necessary to add that, after efficiency, brevity is one of the most valued attributes of a lunacy certificate. These documents have not only to be perused by several people, but they have usually to be copied many times over. Nevertheless, desirable as it is, brevity should not be attained at the expense of adequacy, nor should it be sought for outside the rules of ordinary syntax.

Before a lunacy certificate is sent in the certifier should read it critically, and ask himself two questions concerning it. The first is: 'Will this convince a person who has never seen the patient that the latter is insane?' The second is: 'Will this convince a judge of the High Court that I have used every possible care, both in examining the patient and in drawing up the certificate?' If it is possible for a negative reply to be given to either of these questions, then the document must be redrafted, even though this should entail a second interview with the patient. It is only by constituting himself his own severest critic that the certifier can hope to satisfy others.

The two medical men who certify a patient to be insane must act separately and apart. They must not visit the patient together, and each certificate

must be made out independently of the other. When the certificates are complete, they, together with the petition and statement, must be ratified by a justice's order. The justice may be a County Court judge, a stipendiary magistrate, or a magistrate *specially appointed*. The signature of an ordinary justice of the peace has only temporary value, because an order so signed must, within fourteen days of its date, be approved and countersigned by a justice specially appointed. It therefore saves a great deal of trouble to obtain the signature of a specially appointed magistrate or other qualified functionary in the first instance.

Briefly to recapitulate; the procedure in the case of a private patient for whom institutional treatment has been decided upon is as follows:

1. Communicate with the authorities of the selected institution as to the reception of the patient, and, if necessary, obtain from them the forms for petition and certificates.

2. As soon as these forms are to hand, see that the petition and statement are duly and accurately filled in by the nearest available relative.

3. Arrange with another medical man (not a partner or assistant) separately to examine the patient and draw up his certificate.

4. Examine the patient and certify.

5. The petition and statement, together with the two medical certificates, being complete, the reception

order (the printed form for which is always supplied with the certificates) must be signed by a County Court judge, or a stipendiary magistrate, or a justice of the peace specially appointed. [This official may or may not wish to see the patient before signing the order.]

6. The necessary documents being thus complete, they are to be taken, within seven days of their completion, by the person who accompanies the patient to the institution, and handed by him to the manager, whose authority they constitute for detaining the patient. Copies of these documents are forwarded by the manager to the Commissioners in Lunacy.

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